



Agriculture and Environmental Services

AGRIBUSINESS INDICATORS: Zambia

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ACRONYMS AND ABBREVIATIONS

ABI	Agribusiness Indicators
ACF	Agriculture Consultative Forum
AMIC	Agricultural Market Information Centre (of MAL)
BOZ	Bank of Zambia
CFS	Crop Forecast Survey (by CSO)
CIF	Cost, insurance, freight
CRB	Credit reference bureau
CSO	Central Statistics Office
DFA	District Farmers Association
EU	European Union
EWU	Early Warning Unit (of MAL)
FAO	Food and Agriculture Organization
fob	Free on board
FRA	Food Reserve Agency
FISP	Farmer Input Support Program
FSP	Fertilizer Support Program
FSRP	Food Security Research Project (led by MSU)
GDP	Gross domestic product
GIS	Geographic information system
GPS	Global positioning system
GRZ	Government of the Republic of Zambia
ha	Hectare
HP	Horsepower
IFC	International Finance Corporation
kg	Kilogram
LPI	Logistics Performance Index
LSFs	Large-scale farmers
MAL	Ministry of Agriculture and Livestock
MFI	Microfinance institution
MSU	Michigan State University
MT	Metric ton
NPK	Nitrogen, phosphorus, potassium (fertilizer)
NPL	Nonperforming loan
POS	Point of sale
SCCI	Seed Control and Certification Institute
SSFs	Small-scale farmers
USAID	United States Agency for International Development
VAT	Value added tax (16% in Zambia)
WFP	World Food Programme
WRS	Warehouse receipt system
ZANACO	Zambia National Commercial Bank
ZASTA	Zambia Seed Traders' Association
ZMK	Zambian kwacha
ZNFU	Zambia National Farmers' Union
ZRA	Zambia Revenue Authority

CURRENCY EQUIVALENTS

Currency Unit = Kwacha

US\$1.00 = ZMK 5,275

EXECUTIVE SUMMARY

Zambia is a landlocked country in southern Africa, surrounded by eight countries. The total land area of the country is 752,618 square kilometers, and the population is estimated to be 12.9 million. Zambia's population density of 17 people per square kilometer is much below what is found in neighboring countries. Rural areas are sparsely populated; population is concentrated in a few urban areas as well as along transport corridors. Zambia is also one of the more urbanized countries in the region, with 39 percent of its population living in urban areas. Yet agriculture and agribusiness still play an important role in the Zambian economy, contributing around 20 percent of gross domestic product (GDP) in recent years and about 12 percent of national export earnings. Agriculture employs nearly 70 percent of the labor force and remains the main source of income and employment for most of the people living in rural areas. Zambia is also endowed with fertile land, water, and a favorable climate for agriculture. The relatively well-developed agribusiness industry includes over 400,000 smallholder households that are linked to agribusiness firms through vertically integrated out grower programs, primarily for cotton and other cash crops. During the 2000s, Zambia's GDP grew on average at 6 percent annually, mainly owing to growth in the mining, construction, and service sectors. At the same time, Zambia experienced a significant increase in agricultural production, driven primarily by an expansion in cultivated area. Both economic growth and increased agricultural production have not translated into significant poverty reduction in Zambia, however. Poverty rates over the same period remained essentially unchanged. The challenge Zambia faces today is to continue to foster the economic growth that will increase the competitiveness of agriculture through commercialization that benefits the rural economy, where most of the poor live.

This Agribusiness Indicators (ABI) report for Zambia is based on interviews with government agencies, commercial banks, and private firms (fertilizer importers, seed companies, tractor importers and distributors, and transporters). In addition to these interviews with key informants, price data collected regularly by the Zambia Agricultural Market Information Centre on prices of fertilizer and other key commodities were reviewed. The interviews and sourcing of secondary data were combined with literature reviews. The summary findings are presented below.

Seed. It is estimated that around two-thirds of the maize area is planted with certified seed (specifically, hybrid seed), whereas an estimated 20–30 percent of the wheat and soybean area is planted to certified seed. Zambia's seed sector is fully liberalized. The private sector plays a major role in seed production and exports. Zambia is one of the largest seed exporters in Africa; aside from the domestic market, it exported a recorded total of 17,891 tons of certified seed to other African countries in 2011. In terms of volume, exports to Kenya were the highest, followed by Tanzania and Zimbabwe. Currently, 16 companies in Zambia are registered to produce and distribute seed. The policy for the seed sector is outlined under the National Agriculture Policy (2004–2015), and the sector is governed by the following legislation: Plant Variety and Seed Act (CAP 236), Cotton Act, and Plant Pest and Disease Act. Roles of regulatory institutions like the Seed Certification and Control Institute (SCCI) are clearly defined, and the private sector has favorable views about their performance.

Despite the positive policy environment and growth for the sector, fewer than 40 percent of small- and medium-scale maize farmers¹ used hybrid seed during the 2009/10 season. Nationally, the proportion has increased, however, from 28 percent in 2002/03. Due to continued expansion of the Farmer Input Support Program (FISP), it is likely that the share of small and medium farmers using hybrid seed has increased more recently, but it is still clear that many households do not have access to this input. Recycling of seed is a common practice among smallholder farmers, but recycling hybrid seed leads to dramatic declines in yield in the subsequent years of use. The private sector also faces some hindrances. If a company wants to introduce a new variety of seed in Zambia, it can still take up to two years to obtain official approval. The other issue of current concern to the private sector is the presence of counterfeit seed in the market. The Zambia Seed Traders Association is collaborating with SCCI to better monitor the seed trade and inspection of seed warehouses.

Fertilizer. In 2010/11, total fertilizer use in Zambia was 300,414 tons, which has increased steadily from the preceding years. The government-financed FISP has contributed to this growth by financing 61 percent of the fertilizer used in the country. There is also steady growth in the commercial farm sector,² equal to about 15 percent per year over the past five years (2007-2011). Fertilizer companies selling to commercial farmers point to the large increases in commercial wheat, soybean, sugar, barley, and maize production as drivers of increased demand for their product. On a national level, despite the expansion of FISP and increase in total fertilizer use, only 39 percent of smallholders use inorganic fertilizer. This proportion, however, is higher than what is found in most of the other countries in the region. Over the years, access to fertilizer has increased in Zambia from 20 percent in 2001/02 to 39 percent in 2009/10, though there are variations across provinces, with Lusaka, Central, and Copperbelt having greater access than Luapula and Western provinces.

In the fertilizer sector in Zambia, commercial prices of fertilizer are found to be quite competitive in comparison with those in other countries in the region. Prices for urea in early 2012 were found to be lower than prices in neighboring countries like Tanzania and Mozambique that have sea ports. Despite competitive fertilizer prices, the nutrient/output ratio based on commercial prices are rather high in Zambia. Most of the fertilizer (77 percent) is applied to maize, in contrast with some other countries in Africa where fertilizer is used mainly for export cash crops, such as cotton and tobacco. Meanwhile, the private sector participates less in the fertilizer sector than in the seed sector. There are nine major importers, but domestic fertilizer distribution is handled mainly by district governments and cooperatives. The limited competition has led to complaints from firms excluded from the program, but with the introduction of the e-voucher program, they are hopeful that the role of the private sector may increase, not only in importing but in distributing fertilizer in rural areas.

Mechanization. ABI has used tractors as a proxy to assess the degree of mechanization. Improved use of tractors can help agriculture sector be commercially developed. In Zambia, tractor use is still low, despite Zambia's relatively well-developed agribusiness industry, the positive enabling environment for the private sector, and some promising initiatives linking smallholders to agribusiness firms through vertically integrated out grower programs. There is no reliable figure for the total number of working tractors in Zambia, but it is estimated to be around 6,000, or about 21 tractors per 100 square kilometers of arable land. In comparison to other pilot countries, this

¹ In Zambia, smallholders are defined as operating farms of less than 20 hectares. Small-scale farms are defined as covering 0.1–4.99 hectares; medium-scale farms cover 5–20 hectares.

² Farms with more than 20 hectares of cultivated land are considered commercial farms.

number seems high, but it must be recognized that in Zambia tractors are used mainly by large and corporate farms, while smallholders' access to mechanization services is still extremely limited in most parts of the country. Small- and medium-scale farmers mainly use hand hoes and animal traction.

All tractors in Zambia are imported. Due to the country's landlocked geography, retail prices can be higher than in other countries. The cost of investing in tractors is particularly high for many smallholders, who cannot purchase them or get financing from the local banks. Duties on tractor spare parts (a 15 percent import duty plus 16 percent VAT), high fuel costs, and expensive loans make tractors expensive to operate and maintain. As a result, tractor rental rates in Zambia, at US\$ 125 per hectare for plowing, are much higher than those in some of the other ABI pilot countries.

Finance. Zambia has a sizable number of private commercial banks and nonbank financial institutions operating in the market. Total agricultural lending as of March 2012 amounted to US\$ 415.8 million or 16.5 percent of all credit from commercial banks and microfinance institutions combined. In terms of the proportion of agricultural lending, Zambia is doing better than other ABI pilot countries, but most of the lending goes toward financing big commercial farms. Private firms in Zambia still do not borrow from banks and instead rely on retained earnings or informal financing for long-term investments. Banks admitted they generally do not loan for greenfield investments in agriculture and usually deal only with trade-related businesses. Banks also state that a culture of nonpayment in Zambia, coupled with the risks associated with financing agriculture, does not incentivize the banks to offer services to the sector. As a result, agribusinesses have difficulty accessing commercial credit. Agribusinesses point out that the high interest rates also discourage them from borrowing. In addition to constraints on the supply side, there are demand-side barriers among smallholders, who are not regarded as bankable owing to their low incomes and limited awareness of financial services.

Although Zambia's strict requirements for bank loans make it difficult for smallholders to access finance, some promising recent initiatives are worth noting. Zambia National Commercial Bank's Lima Credit Scheme started about two years ago in collaboration with the Zambia National Farmers' Union (ZNFU). The scheme enables groups of small-scale farmers to receive a seasonal credit for maize. Loan funds are disbursed in kind through input suppliers, who deliver the inputs to the District Farmers Association for onward distribution to each farmer group, and the group members are jointly liable for repayment.

Transport. Because Zambia is landlocked, costs of hauling agricultural inputs and goods are high. These high costs in turn raise production costs and reduce competitiveness in foreign markets. Over the years, Zambia has increased its investments in roads. It has made major progress in constructing a network of trunk roads and in linking the provincial capitals to Lusaka and Lusaka to main international border crossings. The country has also successfully operated a road fund that provides stable allocations of resources to the sector. It is one of the few countries in the region with a road sector budget surpassing what is needed to maintain the main road network and adequate to address the rehabilitation backlog.

Regardless of increased investments in the transport sector, access to roads is poor, with only 17 percent of people in rural areas living within 2 kilometers of an all-season road. Even when these tertiary or "feeder" roads are present, they are in very poor condition. Many become impassable during the wet season. Zambia's overemphasis on trunk roads is criticized by many, who point out

that less attention to feeder roads has led to the deterioration of roads that are crucial for the agricultural sector. On the other hand, some argue that there is very little economic justification to rehabilitate these poor roads; it is expensive, and motorized traffic on most of these roads remains very low (typically less than 20 vehicles per day). Even with these constraints, Zambia has a large and generally competitive trucking industry. At the national level, several medium and large trucking firms, together with individual owner-operators, provide the capacity to move goods around the country and serve most rural areas. Trucking firms say that police interference is not a major problem and point to the fact that many roadblocks have recently been removed, making it easy to move goods around the country. There are few barriers to entry in the trucking industry. Government registration and licensing are not major obstacles, though the process can take time.

Policy Environment for Agribusinesses. Economic reforms of the early 1990s have improved the business climate for the agricultural sector in Zambia. The privatization of several parastatals made agriculture relatively free of major policy distortions and increased private sector participation in input supply, finance, and transport services. Currently, the government's emphasis on agriculture is based on the National Agriculture Policy (2004–2015), which aims to increase agricultural production by promoting commercialization through public and private sector participation. While some private firms admit that the policy environment can be unpredictable when there is a change in government, these companies still consider that government has done a commendable job of consulting the private sector, even if it could sometimes do a better job of listening and taking private sector concerns into account. With respect to the seed and fertilizer sectors, although the FISP input subsidies and Food Reserve Agency maize marketing policies (see details in Appendix 1) continue to have a distorting impact, the private sector expressed few complaints about government intervention or the government crowding out private businesses.

With respect to the consultative process between the private sector and the government, no single apex body for agribusiness exists in Zambia. Each of the sectors covered by the ABI indicators except mechanization has its own association to represent members' interests and engage in policy dialogue with the government. Each association has a different level of capacity.

Some association members expressed the view that their associations could do more to assist them and could also engage the government more effectively. ZNFU was rated very highly by all people with whom the team interacted as a general advocacy group for the agricultural sector in Zambia. Several remarked that ZNFU has a lot of influence with the government. With respect to the government budget, Zambia is a signatory to the Comprehensive Africa Agriculture Development Program Compact and has been spending just about 6 percent of its total budget on agriculture. This level is below the 10 percent target agreed upon under the 2003 Maputo Declaration, but it has been quite constant over the years. In 2008, 5.8 percent of the total budget was allocated to agriculture; the allocation increased to 7.2 percent in 2009 but has been in the range of 6 percent since then. Of this spending, however, nearly half has gone for FISP input subsidies.

Table 1: Summary Observations on Agribusiness Indicators for Zambia

Success Factor	Indicators	Results of Indicators
Improved Seed Use	% staple crop area planted to certified hybrid seed (maize, rice)	Maize 65% of 1.1–1.3 million ha Rice 5% of 34,000–36,000 ha (slow increase) Soybean 20–30% of 29,000–33,000 ha (rapid increase) Wheat 20–25% of 32,000–37,000 ha (rapid increase) On aggregate, an estimated 61% of area given to the four crops listed above was planted with certified seed in 2009/10. Other common staples include cassava, sorghum, millet, Irish potato, sweet potato, groundnuts, and mixed beans, for which use of improved seed or planting material is less prevalent.
Legislative and Regulatory Framework for Seed	Existence of regional and national seed laws and regulations (Y/N, 0-5 scale) ^a	Rating=4.5. Seed Law exists and regulations are fully implemented. Roles of regulatory institutions like the SCCI are clearly defined. SCCI has the capacity and the infrastructure to conduct tests, and the private sector has favorable views about their performance.
	Time required for registration, testing, and obtaining approval for both domestically developed and imported seed	2 years regardless of origin or release in another country, but will change once the Southern African Development Community harmonized regulatory system is fully operational. The current rule is for “two seasons” but in practice this works out to two years, since Zambia has just one rainy season. Private companies will have to pay a fee of US\$ 125 per variety tested, and an additional US\$ 50 for variety release.
	International Seed Testing Association accreditation	Yes. Zambia has had the accreditation since 2001. Every 3 years, accreditation is renewed upon inspection of Zambia’s laboratory facilities.
Seed Imports and Exports	Sales of exported seed	Zambia is Africa’s largest seed exporter. It exported 17,891 MT of seed in 2011, including: 17,617 MT of maize seed (to plant approx. 880,000 ha); 948 kg tobacco seed (to plant approx. 18,960 ha); 239 MT sorghum seed (to plant approx. 58,600 ha); 35 MT soybean seed (to plant approx. 1,400 ha). 2–3 years ago Zambia used to export significantly more seed but has reduced seed exports recently due (in part) to renewed production in Zimbabwe.
	Sales of imported seed as % of total sales of certified seed	Less than 1%.
Private Sector Involvement	% of foundation or basic seed provided by government organizations (and private sector sources? Or imports?)	Very small % by government (nearly 100% private). Production by the public sector mainly includes the Zambia Agriculture Research Institute (ZARI), Cotton Development Trust, and University of Zambia.
	% certified seed multiplied by private firms and farms vs. government entities	100% private; 0% government.
	Number of private firms operating in country	16 registered seed companies in the sector, including 6 main companies (SeedCo, Pannar Seed, MRI Seed, ZAMSEED, Kamano Seed, and Prime Agric Center). Top 2 produce 65% of seed; top 4 produce 85–90% of seed. 1,473 private retail shops licensed by SCCI for seed (most shops sell many other items too).
Private Sector Perceptions	Perception of private sector about government interventions and crowding out of private	Rating=4.9. Government intervention in seed production is nearly nonexistent in Zambia. The private sector can participate without restrictions with minimal competition from the public sector.

	sector. (0=complete government control, 5=significant opportunities for the private sector to participate.)	
Seed Efficiency	Seed to grain price ratio (maize)	<p>Assuming commercial seed = US\$ 2,500/MT; 75% subsidized seed from Farmer Input Support Program (FISP) = US\$ 625/MT; export parity grain price = US\$ 130/MT; Food Reserve Agency (FRA) purchase price = US\$ 260/MT:</p> <p>Subsidized seed price ÷ FRA purchase price= 2.40 Commercial seed price ÷ FRA purchase price= 9.61 Commercial seed price ÷ export parity price= 19.23</p> <p>Seed companies report that most commercial seeds sell for US\$ 2,400–3,100/MT. FISP subsidies vary but have recently been pegged at 75% for input packs including 10 kg seed and 200 kg fertilizer (100 kg Compound D (10:20:10) + 100 kg urea (46% N))</p>
Fertilizer Use	Total fertilizer use (all types)	<p><u>Ministry of Agriculture and Livestock/Early Warning Unit (MAL/EWU) data:</u></p> <ul style="list-style-type: none"> • 2009/10 = 236,372 MT (of which 46% FISP) • 2010/11 = 300,414 MT (of which 59% FISP) <p><u>Private sector reports:</u></p> <ul style="list-style-type: none"> • 2008/09 = 231,000–252,000 MT (of which 32–35% FISP) • 2009/10 = 270,000–300,000 MT (of which 36–40% FISP) • 2010/11 = 320,000–350,000 MT (of which 51–56% FISP) <p>Note the increasing share of FISP from 32% to 35% of the market in 2008/09 to nearly 60% of the market in 2010/11.</p>
	Growth rate for fertilizer use	<p><u>Government purchases under FISP (smallholder market):</u> 2002/03 = 48,000 MT; 2003/04 = 60,000 MT 2004/05 = 50,000 MT; 2005/06 = 50,000 MT 2006/07 = 84,000 MT; 2007/08 = 50,000 MT 2008/09 = 80,000 MT; 2009/10 = 108,000 MT 2010/11 = 178,000 MT; 2011/12 = 183,000 MT 2012/13 = 183,000 MT (tender in progress)</p> <p>Other than commercially managed out grower programs, FISP now supplies more than 90% of the smallholder market.</p> <p><u>Other private fertilizer (commercial farmer market)</u> Private sector reports nonsubsidized market (commercial farmers and smallholder out growers) increasing by around 15% per year for past 4–5 years.</p>
	Fertilizer application rate (kg/ha)	<p>2009/10: 71 kg/ha over total arable land area 2010/11: 90 kg/ha over total arable land area</p>
	Fertilizer use by crops (food vs. cash crops)	<p><u>2010/11</u> Maize (77%); cash crops—cotton, tobacco, wheat (12%); other staple food crops (11%)</p>
Fertilizer Prices	Retail price of 50-kg bag of NPK, urea, and other key fertilizers in 2–3 main agricultural production zones	<p><u>Urea (46% N)</u></p> <ul style="list-style-type: none"> • Lusaka = ZMK 190,000 (US\$ 38.00) • Chipata = ZMK 180,000 (US\$ 36.00) • Mkushi = ZMK 200,000 (US\$ 40.00) <p><u>Compound D (10:20:10)</u></p>

		<ul style="list-style-type: none"> • Lusaka = ZMK 200,000 (\$40.00) • Chipata = ZMK 190,000 (\$38.00) • Mansa = ZMK 220,000 (\$44.00) • Mkushi = ZMK 210,000 (\$42.00)
	Retail price as % of CIF price for urea	As Zambia is landlocked, landed CIF price in Lusaka could not be used as a benchmark to compare prices with other destinations within Zambia. Imported fertilizers are directly transported to these other destinations from the ports in Tanzania and South Africa. Nonetheless, the border price in May 2012 for urea was US\$ 750/MT.
	Fertilizer subsidy (Yes/No; % of private retail)	Yes (approx. 75% less than private retail price). Input pack includes 10 kg hybrid maize seed + 100 kg NPK 10-20-10 + 100 kg urea
	Tariffs and taxes on fertilizer	0% duty, 0% VAT on finished product and major raw ingredients including N,P,K. Micronutrients needed for domestic blending (up to 10% of total value) attract 15% duty and standard (16%) VAT.
Private Sector Participation	Private fertilizer dealers per 10,000 farmers	Data not available. Unlike the seed sector, fertilizer dealers do not need licenses to operate, so there is no registry or office that captures the total number of dealers in the country.
	No. of private companies importing fertilizer	9 major importers, including 2 domestic blenders plus 1 state-owned manufacturer. Importers: Omnia, Nyiombo, Export Trading Group, Zendaki, Profert, Sassol/Bridgeway, Casitex (Yara) Importers/blenders: Greenbelt (custom made blends), Zambia Fertilizer. State-owned blender: Nitrogen Chemicals of Zambia
Fertilizer Efficiency	Nutrient/output ratio (Pn/Po)	Commercial prices (May 2012) Urea price in Mkushi: US\$ 840/MT Maize fob price (Lusaka): US\$ 130/MT Price of nitrogen: US\$ 1,826/MT Pn/Po=12.7 Subsidized prices (May 2012) Urea price (May 2011): US\$ 210/MT (@75% subsidy) Maize sold to FRA: US\$ 260/MT Price of nitrogen: US\$ 457/MT Pn/Po=1.76
Use of Mechanization	Total no. of tractors per 100 km ² of arable land	20.7 (own estimate, based on uncertain no. of tractors)
	Average horsepower (HP) per 100 km ² of arable land	1,343 HP per 100 km ² arable land Most popular model = 65HP x 6,000 total tractors = 390,000 total HP ÷ 290.3 100 km ² arable land = 1,343 HP per 100 km ²
Mechanization Prices	Cost of plowing 1 ha (rental rate)	Plow/rip = US\$ 125/ha rental, excluding fuel (4.5 liters or about US\$ 6.75/ha) Plant/spray = US\$ 50/ha rental, excluding fuel (2–3 liters or about US\$ 3.75/ha) Transport = US\$ 50/hour, excluding fuel (5–6km per liter @ US\$ 1.50/liter) <i>n.b. Diesel costs around US\$ 1.44/liter (June, 2012).</i>

	Tariffs and taxes on tractors and tractor spare parts	All sizes of tractor: 0% duty; 0% VAT* Tractor attachments: 0% duty; 0% VAT Tractor spare parts: 15% duty; 16% VAT Hand-sprayers: 15% duty; 16% VAT * <i>New policy since late 2011, previously only zero duty/ zero VAT on tractors up to 90 HP.</i>
	Price of a new tractor	US\$18,500–20,000 for 65 HP 2x4 US\$ 22,000–25,000 for 65 HP 4x4 <i>n.b. John Deere, Farmtrac, and Tafe are the common brands sold in the market. Prices vary based on the brands and horsepower of the tractors.</i>
	Percent of total tractors imported by the private sector	100% private (including +/- 15% through project-backed loans); government does not import tractors unless for own use. <i>n.b. Implement dealers expressed concern about possible donor projects that may inject new tractors at below market prices.</i>
Use of Agricultural Finance	Inventory of lenders to agricultural production and agribusiness	19 registered commercial banks in Zambia (May 2012) of which 6 account for +/- 93% of agricultural lending equal to ZMK 2,068,328 million (US\$ 392.05 million).
	Percent of commercial bank lending to agriculture and agri-enterprises	17.1%
	Percent of finance by ag-enterprises and commercial farms with outstanding loan, if recent survey exists	Data not available
Efficiency and Cost of Agricultural Finance	Commercial bank average nominal interest rate on deposits	<u>April 2012</u> Savings accounts = 4.3%
	Commercial bank average nominal interest rate on loans to agriculture	<u>April 2012</u> Weighted lending base rate = 16.3% Lending margin = 7% Lending rate = 23.3% <i>n.b. In an effort to reduce borrowing rates, BOZ recently announced a flat 9% base rate for all types of loans. Banks, however, are still free to add their own margin and reported they do not foresee any immediate change in final lending rates as details of the BOZ policy are not yet clear.</i>
	Percent of non-performing loans (NPLs) for agriculture	10.4% of commercial bank loans to agriculture (no data for microfinance institution loans) <i>n.b. Loans classified as NPLs if not serviced for 90 days.</i>
Other Financial Services and Regulations	Existence of a warehouse receipt system (WRS) (0–5 scale) ^b	1 (Act recently approved, waiting for implementation)
	Existence of a law on leasing (Y/N)	Yes. Covered by Banking Act. <i>n.b. Banking Act lists leasing as a financial service, but there is otherwise no specific</i>

		<i>"law on leasing" (although there is a law on hire-purchase)</i>
	Presence of a collateral registry (Y/N)	No. No consolidated registry, but some recent discussion on maybe setting this up.
	Law on movable assets (Y/N)	Yes. Covered by the Banking Act. <i>n.b. Zambia's legal framework permits institutions to accept movable assets as collateral, but financial institutions are found to be hesitant to accept such collaterals. Hence, it is not widely used.</i>
	Presence of a credit reference bureau/service that lenders can access (Y/N, 0-5 scale) ^c	Yes (3). By law, all banks must show they did a credit search before approving a loan. Yet point of sale (POS) data is not included?
Cost of Transport	Price per MT per km on main and secondary routes	US\$ 0.11 per MT per km on main routes 0.13 per MT per km on secondary routes <i>n.b. Reduce by 66% if able to negotiate backload deal.</i>
	Cost to ship a 20' and 40' container load of inputs and outputs (US\$/MT)	<u>Road from Dar es Salaam or Durban (front load)</u> 20' = US\$ 3,200; 40' = US\$ 6,000 <u>Road to Dar es Salaam or Durban (back load)</u> 20' = US\$ 2,500; 40' = US\$ 4,500 <u>Onward sea freight to/from Europe (add to road rates)</u> 20' = US\$ 3,500; 40' = US\$ 5,250 20' max 14 MT gross; 40' max 28 MT gross (incl. container)
Transport Infrastructure	Rural Access Index: % of people within 2 km of a road	64% (2003 Survey) 16.8% (GIS)
	Logistics Performance Index	Rank = 138 out of 155 countries Score = 2.28 out of 5 (1 = worst, 5 = best) % of highest performer = 41.2
Regulatory Environment	Number of days required to (a) register a truck for hauling agricultural products and (b) to obtain a license for hauling agricultural products	(a) 21 days for registration, including road service license (b) No special license required for hauling agricultural products <i>n.b. Further breakdown (composition) of time estimate not available.</i>
Private Sector Perceptions	Perceptions of truckers on transport infrastructure (0–5 scale: 0 = very bad, 5 = very good)	Overall average = 1.7 Quality of primary trunk roads = 2.3 Quality of secondary roads = 1.7 Quality of tertiary (feeder) roads = 1.0 Density of road network (ability to reach rural areas) = 0.7 Maintenance and periodic upgrading by government = 0.7 Degree and effectiveness of government regulation of transport providers = 2.0 Extent of unofficial/quasi-official harassment = 3.7
	Perceptions of truckers on ease of entry into trucking of foodstuffs (0-5 scale: 0 = disagree strongly, 5 = agree strongly)	Overall average = 4.0
	Perceptions of truckers	Overall average = 3.6

	on the competitiveness of transport services (0–5 scale: 0=disagree strongly, 5 = agree strongly)	
Policy Environment and Advocacy Role	Private sector perceptions of agribusiness enabling environment (0–5 scale)	<p><u>Summary of private sector perceptions (overall average results)</u> Seed = 4.4 Fertilizer = 4.2 Trucking (ease of entry) = 4.0 Trucking (competitiveness) = 3.6 Overall average = 4.1</p> <p><i>n.b. Business perception indicators not yet defined for agri-finance or mechanization.</i></p>
	Policy consistency: Sudden or frequent changes in policy, regulations, and rules that affect business (0–5 scale) ^d	<p><u>Summary of private sector perceptions (overall average results)</u> Overall average = 3.0 Examples of problematic issues/policies include: (a) Tender requirements and implementation modalities of FISP, including: (i) specification for composite fertilizer only thereby preventing domestic blenders from participating; (ii) requirement to have more than 50% of fertilizer in the country already at time of tender thereby preventing small firms from participating; and (iii) late announcement of size and scale of coverage. (This year, expect FISP to pilot a voucher approach in 10 districts.) (b) High interest rates and strict requirements for gaining access to credit. (c) Risk of donor tractors displacing private sector sales.</p>
	Private sector advocacy group for agribusiness: existence and effectiveness (0-5 scale) ^e	<p><u>Sector-specific associations:</u> Seed Traders' Association (ZASTA) = 3.5 Zambia Fertilizer and Plant Nutrition Association = 3.0 Machinery Dealers Association = 0.0 Banker's Association of Zambia = 4.0 Trucker's Association = 3.0 <u>Other agriculture associations</u> Zambia National Farmers' Union (ZNFU) = 5</p>
Policy and Trade Measures	Producer share of cash crop export price for one key exportable (cotton)	<p>Cotton 54% (2010/11 season)</p> <p><i>n.b. In previous 2009/10, producer share reported to be "a bit less."</i></p>
	Government expenditure on agriculture as % total government expenditure	<p>6% (with around 43% of agricultural spending going for input subsidies)</p> <p><i>n.b. Comprehensive Africa Agriculture Development Program Compact signed Jan. 18, 2011.</i></p>
	Government expenditure on agriculture as % of agricultural GDP	<p>17.1% (2010 Ag GDP US\$ 1.4904 billion; 2010 government expenditure on agriculture approx. US\$ 255.3 m)</p>

Source: Summary of indicators presented in the report.

a Ordinal scale: 0=no framework; 1=draft law or revision; 2=its passage/conforms with regional protocols; 3=development of bylaws or guidelines for implementation; 4=actual implementation; 5=effective implementation).

b 0 = no WRS in place; 1 = WRS *under development*; 2 = warehouse receipts laws/regulations developed and passed/approved; 3 = *warehouse receipts laws/regulations implemented by commercial banks*; 4 = warehouse receipts accepted by commercial banks (farmers/traders able to use as collateral); 5 = WRS expands (increased number of banks and certified warehouses, increased grain stored in certified warehouse against receipts issued and used as collateral).

- c* 0 = CRB does not exist; 1 = CRB planned, under design; 2 = CRB underway, but used by small number of financial institutions with limited number of farms/firms covered; 3 = most commercial banks participate; 4 = widespread use with POS additions (stores/suppliers that sell goods on credit); 5 = most commercial farms and firms covered in reporting system on bank credit histories and POS on credit.
- d* 0 = highly inconsistent and unpredictable policy environment with multiple shifts in direction; 5 = highly positive view of a consistent environment where change is infrequent or at least preceded by sufficient consultation with the private sector.
- e* 0 = no such group; 1 = just established (met 1–2 times with key government policy makers); 2 = underway for several years with at least annual meetings with policy makers; 3 = at least one policy/regulatory victory; 4 = several policy victories; and 5 = highly respected entity often consulted by government.

Chapter 1: INTRODUCTION

1.1 Background

Agriculture and agribusiness play an important role in the Zambian economy, contributing around 20 percent of GDP in recent years and about 12 percent of national export earnings. Agriculture employs nearly 70 percent of the labor force and remains the main source of income and employment for most of the people living in rural areas. Zambia is also endowed with fertile land, water, and a favorable climate for agriculture. In addition, Zambia has a relatively well-developed agribusiness industry with over 400,000 smallholder households linked to agribusiness firms through vertically integrated out grower programs, primarily for cotton and, to a lesser extent, tobacco and other cash crops. Over the last several years, Zambia has experienced a significant increase in agricultural production, driven primarily by an expansion in cultivated area, yet poverty rates have remained virtually unchanged. Rural poverty rates actually increased marginally from 77.3 percent in 2004 to 77.9 percent in 2010, a period that coincided with a significant increase in spending on agriculture (Sitko and Jayne 2011). Crop yields also saw modest growth. Maize is an important staple crop in Zambia and in the 2011/2012 planting season, average yields for maize on small- and medium-scale farms were as low as 2.2 tons per hectare (higher than most neighboring countries). Yields were much higher on large-scale farms at 4.85 tons per hectare.

Table 2: Crop Yields among Smallholders in Zambia (MT/ha), 2001 and onwards

Crop	2001/02	2003/04	2005/06	2007/08	2009/10	2011/2012
Maize	1	1.7	1.5	1.3	2.1	2.2
Sorghum	0.7	0.7	0.5	0.5	0.9	0.78
Rice	1	1	1.3	1.2	1.7	1.44
Millet	0.7	1	0.7	1	1.1	0.79
Groundnuts	0.4	0.7	0.5	0.6	0.7	0.61

Source: FAOSTAT; Ministry of Agriculture and Livestock (2011/2012 data).

1.2 Agribusiness Indicators Methodology for Zambia

This report presents findings of a data collection exercise carried out to compile a set of pilot agribusiness indicators for Zambia. The work was carried out as part of The World Bank's Agribusiness Indicator (ABI) Program. The program, which began in late 2010, aims at developing a manageable set of indicators on the ease (or difficulty) of doing agribusiness in African countries, as a basis for assessing whether the enabling environment in a given country is conducive to agriculture-led growth, agribusiness investment, and competitiveness. The collection and publication of a common set of agribusiness indicators will also allow cross-country comparisons on the performance of the agriculture sector and is expected to foster debate on how some countries are doing better than others in key themes and indicator areas.

The data compiled for Zambia were prepared using a list of preliminary indicators covering the following areas:

1. Access to and availability of certified seed.

2. Availability of and access to fertilizer.
3. Access to farm machinery, particularly tractor hire services for land preparation.
4. Access to agricultural and agri-enterprise finance.
5. Cost and efficiency of transport, particularly trucking.
6. Measures of policy certainty and the orientation of the enabling environment as perceived by the private sector.
7. Various policy, trade, and fiscal measures.

The team is cognizant of the fact that for agribusiness other factors may be equally important, such as access to water, land, and even labor. Similarly, access to markets and availability of other types of infrastructure such as electricity and communications are not included in the indicators examined.

1.3 Approach and Limitations

The pilot indicators presented here are based on a review of the literature, government statistical bulletins, and primary interviews in the seed, fertilizer, mechanization, agricultural finance, and transport subsectors. The resulting indicators are presented in matrix form, together with notes indicating the specific data source (or sources) used for each indicator. Where appropriate, comments are also included about the quality of the data and their relevance to understanding agribusiness conditions in Zambia. Appendix 2 presents supplementary data tables and further narrative interpretation of recent developments in the agricultural sector and agribusiness opportunities.

During the interviews, respondents were each asked to give their opinions on the ease of doing business and policy environment. A set of questionnaires was developed for this part of the exercise based on guidelines. Perception indicators on the quality of road infrastructure and other transport sector issues were added to supplement the checklist guidelines. While every effort was made to meet with a broad sample of agribusiness players, it should be kept in mind that time limitations and the far-reaching nature of the agribusiness indicators meant that it was possible to meet only with three to four firms per subsector. The perception indicators, therefore, should be treated with particular caution, not only because of the limited sample but also because of the need to meet with larger and better-established firms to compile the other information required by the draft indicators. Different firms, particularly smaller firms and newly emerging firms, could have very different views of agribusiness conditions than the ones expressed by the firms interviewed for this report. To provide a more reliable picture of business perceptions, a much broader and scientific survey should be carried out.

Other than reporting on the pilot indicators for Zambia, a further aim of the exercise was to draw lessons for the broader ABI Program. In this regard, the approach was not so much to provide a complete or synthetic picture of Zambian agribusiness but to test which data are available and how well the pilot indicators do in describe local conditions. Some areas that are important to Zambian agribusiness, such as irrigation development, livestock production, and agricultural marketing policies, are not covered by the pilot indicators. Another comment from several respondents was that the pilot indicators seem to describe recent agricultural sector performance more than the things that the private sector needs to know before setting up a business. The requirements for obtaining an investment license, requirements for bank lending, and spatial differences in

agribusiness opportunities around the country, for example, are not specifically covered by the pilot indicators.

Another lesson from the field work was that the pilot indicators do not always give the most meaningful picture of Zambian agribusiness conditions. In the seed sector, for example, the draft perception indicators include several questions on access foreign germplasm and difficulties competing with government seed production, when neither of these issues is a problem in Zambia. Similarly, in the fertilizer sector, questions on the quality of imported fertilizer are not particularly relevant, first because of trade standards and inspection work carried out by the Zambia Bureau of Standards, and second because importers say they can buy whatever quality they want as long as the product complies with minimum standards.

In both the seed and fertilizer sectors, counterfeiting and/or adulteration of genuine products were reported to be serious problems in open markets. The extent of these (illegal) sales may be difficult to measure through a specific indicator, but they are still a widespread problem in Africa and an important factor underlying agribusiness opportunities. In future iterations of the ABIs, some attention to describing the extent of counterfeit marketing and/or local efforts to deal with the problem (market surveillance, registration of retail vendors, and so forth), may be a useful addition.

1.4 Objective of the Report

The objective of the Zambia ABI country report is to examine factors that have affected agricultural productivity, market access and the policy environment for agriculture in Zambia. The findings of the report will contribute towards preparation of a synthesis report that will present a matrix to benchmark country performances on indicators referred in section 1.2

The anticipated impact of the presentation of country performances will be to raise the competitiveness of African agriculture by bringing into sharper focus measures of how individual countries are transitioning towards a more commercial agriculture. This includes development of a supporting network of private sector agricultural service providers, and effective new policies, facilitating access to inputs and markets, and increased government and private sector cooperation and understanding. The aim of the exercise is to validate the approach by the response to the synthesis report so that the effectiveness of the indicators builds with use, refinement and capturing the impact of some of the new and more enlightened policies that some countries are putting into place.

The primary audience for program outputs will be World Bank staff in the country and Africa region, policy-makers in African governments and regional organizations, private sector advocacy groups (typically producer and commodity/trade associations) , and other donors. It is intended that development practitioners and stakeholders of all kinds will use the findings during and after the project to inform public-private dialogue, shape policy reform, and guide both public and private investment.

This report consists of seven chapters. The remaining chapters summarize the main findings for each indicator area: seed, fertilizer, mechanization, finance, transport, and policy.

Chapter 2: ACCESS TO AND USE OF IMPROVED SEED

Since the early 1990s, Zambia’s seed sector has been fully liberalized. The private sector plays a major role in seed production and exports; currently 16 companies are registered to produce and distribute seed. The policy for the seed sector is outlined under the National Agriculture Policy (2004–2015), and the sector is governed by the following legislation: Plant Variety and Seed Act (CAP 236), Cotton Act, and Plant Pest and Disease Act. In addition, a Plant Breeder’s Act (2007) exists, the regulations for which are under preparation. In Zambia, it can take up to two years to release a new variety, a period that which is likely to change once the Southern African Development Community harmonized regulatory system is fully operational. Since 2007, 58 varieties of maize seed have been released in Zambia (44 percent of all varieties released). On average, 12 varieties of maize seed alone are released annually.

Table 3: Summary Observations on Improved Seed in Zambia

Success Factor	Indicators	Results of Indicators	Data Source
Improved Seed Use	% staple crop area planted to certified hybrid seed (maize, rice)	Maize 65% of 1.1–1.3 million ha Rice 5% of 34,000–36,000 ha (slow increase) Soybean 20–30% of 29,000 to 33,000 ha (rapid increase) Wheat 20–25% of 32,000–37,000 ha (rapid increase) On aggregate, an estimated 61% of area given to the four crops listed above was planted with certified seed in 2009/10. Other common staples include cassava, sorghum, millet, Irish potato, sweet potato, groundnuts, and mixed beans, for which use of improved seed or planting material is less prevalent.	Interviews with Seed Certification and Control Institute (SCCI) and private seed companies.
Legislative and Regulatory Framework for Seed	Existence of regional and national seed laws and regulations (Y/N, 0–5 scale) ^a	Rating=4.5. Seed Law exists and regulations are fully implemented. Roles of regulatory institutions like the SCCI are clearly defined. Their main functions include: (i) variety release (testing and registration); (ii) plant variety protection; (iii) seed systems inspections; (iv) seed testing. SCCI has the capacity and the infrastructure to conduct tests, and the private sector has favorable views about its performance.	Interviews with SCCI and private seed companies.
	Time required for registration, testing, and obtaining approval for both domestically developed and imported seed	2 years regardless of origin or release in another country, but will change once Southern African Development Community harmonized regulatory system is fully operational. The current rule is for “two seasons” but in practice this works out to two years, since Zambia has just one rainy season. Private companies will have to pay a fee of US\$ 125 per variety tested, and an additional US\$ 50 for variety release.	
	International Seed Testing Association accreditation	Yes. Zambia has had the accreditation since 2001. Every three years this accreditation is renewed upon inspection of Zambia’s laboratory facilities.	
Seed Imports and Exports	Sales of exported seed	Zambia is Africa’s largest seed exporter with 17,891 MT of seed exported in 2011, including: 17,617 MT maize seed (to plant approx. 880,000 ha)	Interviews with SCCI and private seed

	Sales of imported seed as % total sales of certified seed	<p>948 kg tobacco seed (to plant approx. 18,960 ha) 239 MT sorghum seed (to plant approx. 58,600 ha) 35 MT soybean seed (to plant approx. 1,400 ha)</p> <p>2–3 years ago Zambia used to export significantly more seed, but exports have fallen back recently due (in part) to renewed production in Zimbabwe.</p> <p>Less than 1%</p>	companies; SCCI 2011 Annual Report; approximate areas covered estimated from own crop budget analysis.
Private Sector Involvement	% of foundation or basic seed provided by government organizations (and private sector sources? Or imports?)	Very small % by government (nearly 100% private, including 30% imported foundation seed). Some production by the public sector, mainly the Zambia Agriculture Research Institute (ZARI), Cotton Development Trust, and University of Zambia.	
	% certified seed multiplied by private firms and farms vs. government entities	100% private; 0% government	
	Number of private firms operating in country	<p>16 registered seed companies in the sector, including 6 main companies (SeedCo, Pannar Seed, MRI Seed, ZAMSEED, Kamano Seed, and Prime Agric Center). Top 2 produce 65% of total seed; top 4 produce 85–90% of total seed.</p> <p>1,473 private retail shops licensed by SCCI for seed (most shops sell many other items, too).</p>	
Private Sector Perceptions	Perception of private sector about government interventions and crowding out of private sector. (0=complete government control; 5=significant opportunities for the private sector to participate.)	Rating=4.9. Government intervention in production of seeds is nearly nonexistent in Zambia. The private sector can participate without restrictions, with minimal competition from the public sector.	<i>Limited sample= 5 interviews</i>
Seed Efficiency	Seed to grain price ratio (maize)	<p>Assuming commercial seed = US\$ 2,500/MT; 75% subsidized seed from Farmer Input Subsidy Program(FISP) = US\$ 625/MT; export parity grain price = US\$ 130/MT; Food Reserve Agency (FRA) purchase price = US\$ 260/MT:</p> <p>Subsidized seed price ÷ FRA purchase price = 2.40 Commercial seed price ÷ FRA purchase price = 9.61 Commercial seed price ÷ export parity price = 19.23</p> <p>Seed companies report that most commercial seeds sell for US\$ 2,400–3,100/MT. FISP subsidies vary but have recently been pegged at 75% for input pack including 10 kg seed and 200 kg fertilizer (100 kg Compound D (10:20:10) + 100 kg urea (46% N).</p>	Various interviews, including reports on FRA buying prices (2010/11 season) and current export parity price.

Source: Summary of indicators presented in the chapter.

a Ordinal scale in which 0=no framework; 1=draft law or revision; 2=its passage/conforms with regional protocols; 3=development of bylaws or guidelines for implementation; 4=actual implementation; and 5=effective implementation).

2.1 Background on the Seed Sector in Zambia

Zambia has a long history of original genetic research and certified seed production. Before liberalization, seed research and multiplication were carried out with technical assistance from Yugoslavia through the now privatized parastatal company, ZAMSEED. During that time, expert plant breeders working for ZAMSEED developed many new varieties of hybrid maize, making Zambia a recognized leader in African seed technology. This tradition continues today. ZAMSEED and MRI Seed (a private company set up by ZAMSEED's chief plant breeder following liberalization) account for two of just five companies in Africa with the capacity to develop new types of germplasm, the other three being Pannar Seed in South Africa, SeedCo from Zimbabwe, and to a lesser extent Kenya's National Seed Research Institute.

Zambia is Africa's largest seed exporter, and outside the domestic market exported a recorded 17,891 tons of certified seed to other African countries in 2011 (Appendix 2). Most of the exported seed (98 percent) was maize; the rest included small quantities of tobacco, sorghum, and soybean seed. In terms of volume, exports to Kenya were highest, followed by Tanzania and Zimbabwe (see Appendix 2). Other destinations included Botswana, Swaziland, Malawi, Rwanda, and South Africa. As Zambia is self-sufficient in seed production for its major staple crops, less than 1 percent of the seed used in the country is imported; in 2011, Zambia imported a total volume of 1,082 tons of seed, mainly vegetable seed. According to the estimates provided by the private sector, Zambia produces about 30,000 tons of hybrid maize seed annually, of which about 60 percent is exported.

2.2 Private Sector Participation in the Seed Sector

Seed multiplication is a technically demanding activity and is carried out in Zambia by modern commercial farmers with specialized skills. In countries without a large commercial farm sector, seed multiplication would need to be carried out by the seed company itself or producer groups that are trained to possess the technical expertise. For hybrid maize seed multiplication, seed is planted in a staggered arrangement in which there are usually four to five rows of female plants (plants that have had the tassel removed) per row of pollen-producing male plants (plants with the tassel left in place). It is imperative for the tassel to be removed carefully, thoroughly, and on time in order to produce a seed-bearing female plant. As the term "hybrid" suggests, the male and female rows usually consist of different varieties, meaning that seed production requires great care during planting to set the rows out and ensure proper spacing. Seed maize must also be grown far enough from any normal maize crop to avoid cross-pollination, so it is not well suited to village-based production by smallholders. The commercial farmers and smallholder farmers in out grower schemes who produce seed in Zambia are carefully selected by seed companies. They work under close supervision consisting of regular visits by technical experts, who inspect each stage of the process to ensure good quality.

Licensed sellers operate in various provinces and districts to market the seed produced by the companies. SCCI, the government agency that issues the licenses, issued licenses to 1,473 seed sellers in 2011. Lusaka Province had the highest number of licenses issued, while Luapula Province had the lowest (SCCI 2011). The Zambia Seed Traders Association (ZASTA) represents the private

seed sector, which according to the interviewees is an active association that works as a platform for policy dialogue with the government. The members have a favorable view of the government and give a high rating of 4.9 (out of 5) for creating an enabling environment for the private sector to operate and do business. They also stated that the private sector can participate in seed production without restrictions with minimal competition from the public sector. This is true but recent research show evidence that the government intervention in maize seed sales under FISP has crowded out private commercial seed retailing. This has occurred because some of the subsidized maize seed is targeted to households that would otherwise buy inputs at market prices. The study also found that each one kg increase in subsidized seed acquired by the household reduced commercial improved maize seed purchases by 0.49 kg in Zambia. (Mason and Ricker-Gilbert 2012).

Another contentious issue faced by the private sector is the problem of counterfeit seed in the market. To address the problem, ZASTA is collaborating with SCCI in its regular monitoring of seed trade and inspection of seed warehouses. Currently, the domestic market consists of large-scale farmers who use 100 percent hybrid seed. The remaining market for seed, mainly for maize is the government-sponsored Farmer Input Subsidy Program (FISP), which is providing a subsidy of 75 percent to smallholder farmers. In 2011, FISP bought an estimated 9,000 tons of maize seed from the major seed companies, though late payments to the companies have been a problem from time to time. In addition, under out grower schemes, seed is provided to farmers either through local agents or the companies themselves. Local level agents are also found to exist in rural towns or villages supplying seed to the smallholders.

2.3 Farmers' Seed Use

In Zambia, an estimated two-thirds of the maize area is planted with certified (hybrid) seed. No open-pollinated maize varieties are multiplied by specialized producers to be sold commercially. For wheat and soybeans, an estimated 20–30 percent of the cropped area is planted to certified seed. This level of access to improved seed needs be viewed in light of the fact that fewer than 40 percent of small- and medium-scale maize farmers³ used hybrid seed up until at least the 2009/10 season (Table 4), although the percentage of farmers using hybrid seed increased over the period covered in the table. Private seed companies confirmed this trend, attributing it mainly to FISP. There are also regional variations; Central and Lusaka Province have much higher adoption rates, for example, than while Luapula and Eastern Provinces, which are still lagging.

³ In Zambia, smallholders are defined as operating farms of less than 20 hectares. Small-scale farms are defined as 0.1–4.99 hectares, whereas medium-scale farms are 5–20 hectares.

Table 4: Percent of Smallholders Using Hybrid Maize Seed

	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Central	44.09	43.37	54.36	60.35	50.76	64.78	56.38	70.32
Copperbelt	32.42	35.81	40.67	39.99	45.93	47.13	52.95	55.44
Eastern	15.36	12.58	14.85	17.68	17.84	18.57	19.19	28.81
Luapula	9.98	8.95	6.56	8.86	10.05	8.54	11.36	14.56
Lusaka	66.13	56.49	65.00	62.72	61.74	65.95	62.29	68.22
Northern	12.63	12.32	15.51	17.02	24.72	26.33	27.06	31.40
Northwestern	9.59	11.04	11.59	14.50	23.74	18.71	20.68	27.82
Southern	75.21	47.39	58.30	49.61	62.71	72.05	57.59	54.72
Western	25.12	24.76	17.43	18.58	20.88	26.70	19.56	21.87
National	27.69	23.63	26.78	27.83	31.33	34.87	32.57	38.21

Source: FRSP (2011:108) cited as CFS, various years.

Recycling of seed is still common among smallholders, even though recycling hybrid seed causes yields to drop dramatically in the subsequent years. Due to continued expansion of FISP, it is likely that the share of small and medium farmers using hybrid seed has increased more recently, but it is still clear that many households do not have access to this input. One of the factors is cost. The seed-to-grain price ratio for maize in Zambia is low (2:1), and seed is more likely to be affordable when it is subsidized and the grain is bought by the Food Reserve Agency (FRA). Under commercial prices, the ratio is as high as 19:1, which does not provide an incentive for farmers to use improved seed. Production by large commercial farmers also distorts the picture of farmers' access to certified seed as measured by the percentage of cropped area planted with improved varieties. While large-scale commercial maize production has tailed off in recent years due to FRA price distortions and the fact that FRA does not buy from large commercial growers, many large-scale farmers are still involved in maize production and invariably plant 100 percent hybrid seed.

Chapter 3: FERTILIZER ACCESS AND AVAILABILITY

Fertilizer use has increased steadily in Zambia in recent years. Total fertilizer use in 2010/11 was 300,414 tons⁴ (MAL 2011). In 2003, the government purchased 48,000 tons under FISP,⁵ which had increased to 183,000 tons in 2010/11. In addition to the growth of FISP that accounts for a large percentage of fertilizer sales to smallholder farmers planting maize (excluding fertilizer provided by tobacco out grower companies and some cotton out grower companies for maize grown in rotation with those crops), there has been steady growth in the commercial farm sector⁶ equal to about 15 percent per year for the past five years (2007-2011). Fertilizer companies selling to commercial farmers point to the large increases in commercial wheat, soybean, sugar, barley, and maize production as drivers of this increased demand. Exports of domestically blended fertilizer to the Democratic Republic of Congo and other neighboring countries have also been on the rise.

Table 5: Summary Observations on Fertilizer Use in Zambia

Success Factor	Indicators	Results of Indicators	Sources
Fertilizer Use	Total fertilizer use (all types)	<p><u>Ministry of Agriculture and Livestock/Early Warning Unit (MAL/EWU) data:</u></p> <ul style="list-style-type: none"> • 2009/10 = 236,372 MT, of which 46% Farmer Input Subsidy Program (FISP) • 2010/11 = 300,414 MT, of which 59% FISP <p><u>Private sector reports:</u></p> <ul style="list-style-type: none"> • 2008/09 = 231,000–252,000 of which 32–35% FISP • 2009/10 = 270,000–300,000 MT (of which 36–40% FISP) • 2010/11 = 320,000–350,000 MT (of which 51–56% FISP) <p>Note the increasing share of FISP from 32% to 35% of market in 2008/09 to nearly 60% of the market in 2010/11.</p>	MAL/EWU (2012) and private sector interviews for total fertilizer use.
	Growth rate for fertilizer use	<p><u>Government purchases under FISP (smallholder market)</u></p> <p>2002/03 = 48,000 MT; 2003/04 = 60,000 MT 2004/05 = 50,000 MT; 2005/06 = 50,000 MT 2006/07 = 84,000 MT; 2007/08 = 50,000 MT 2008/09 = 80,000 MT; 2009/10 = 108,000 MT 2010/11 = 178,000 MT; 2011/12 = 183,000 MT 2012/13 = 183,000 MT (tender in progress)</p> <p>Other than commercially managed out grower programs, FISP now supplies about 95% of the smallholder market.</p> <p><u>Other private fertilizer (commercial farmer market)</u></p>	FISP historic data; industry interviews.

⁴ Data in line with the estimation are provided by the private sector, which reports fertilizer use is about 320,000–350,000 tons.

⁵ Detailed description of FISP is provided in Appendix 1.

⁶ These farms cultivate more than 20 hectares.

		Private sector reports nonsubsidized market (commercial farmers and smallholder out growers) increasing by around 15% per year for past 4–5 years.	Own calculations from MAL/WSU (2012).
	Fertilizer application rate (kg/ha)	2009/10: 71 kg/ha over total arable land area 2010/11: 90 kg/ha over total arable land area	
	Fertilizer use by crops (food vs. cash crops)	<u>2010/11</u> Maize (77%); cash crops (cotton, tobacco, wheat) (12%); other crops (11%)	
Fertilizer Prices	Retail price of 50-kg bag of NPK, urea, and other key fertilizers in 2–3 main agricultural production zones	<u>Urea (46% N)</u> <ul style="list-style-type: none"> • Lusaka = ZMK 190,000 (US\$ 38.00) • Chipata = ZMK 180,000 (US\$ 36.00) • Mkushi = ZMK 200,000 (US\$ 40.00) <u>Compound D (10:20:10)</u> <ul style="list-style-type: none"> • Lusaka = ZMK 200,000 (\$40.00) • Chipata = ZMK 190,000 (\$38.00) • Mansa = ZMK 220,000 (\$44.00) • Mkushi = ZMK 210,000 (\$42.00) 	Compiled from Agricultural Market Information Centre (AMIC Weekly Report, 1-6 May 2012) and industry interviews.
	Retail price as % of CIF price for urea	As Zambia is landlocked, landed CIF price in Lusaka could not be used as a benchmark to compare prices with other destinations within Zambia. Imported fertilizers are directly transported to these other destinations from the ports in Tanzania and South Africa. Nonetheless, the border price in May 2012 for urea was US\$ 750/MT.	Industry interviews.
	Fertilizer subsidy (Yes/No; % of private retail)	Yes. Approx. 75% less than private retail price). Input pack includes 10 kg hybrid maize seed + 100 kg NPK 10-20-10 + 100 kg urea.	Industry interviews.
	Tariffs and taxes on fertilizer	0% duty, 0% VAT on finished product and major raw ingredients, including N,P,K. Micronutrients needed for domestic blending (up to 10% of total value) attract 15% duty and standard (16%) VAT.	Industry interviews and Zambia Revenue Authority online tariff guide.
Private Sector Participation	Private fertilizer dealers per 10,000 farmers	Data not available. Unlike seed sellers, fertilizer dealers do not need licenses to operate, so no registry seems to capture the total number of dealers in the country.	
	No. of private companies importing fertilizer	There are 9 major importers, including 2 domestic blenders plus 1 state-owned manufacturer. Importers: Omnia, Nyiombo, Export Trading Group, Zendaki, Profert, Sassol/Bridgeway, Casitex (Yara) Importers/blenders: Greenbelt (custom made blends), Zambia Fertilizer State-owned Blender: Nitrogen Chemicals of Zambia	Industry interviews.
Fertilizer Efficiency	Nutrient/output ratio (Pn/Po)	Commercial prices (May 2012) Urea price in Mkushi: US\$ 840/MT Maize fob price (Lusaka): US\$ 130/MT Price of nitrogen: US\$ 1,826/MT	

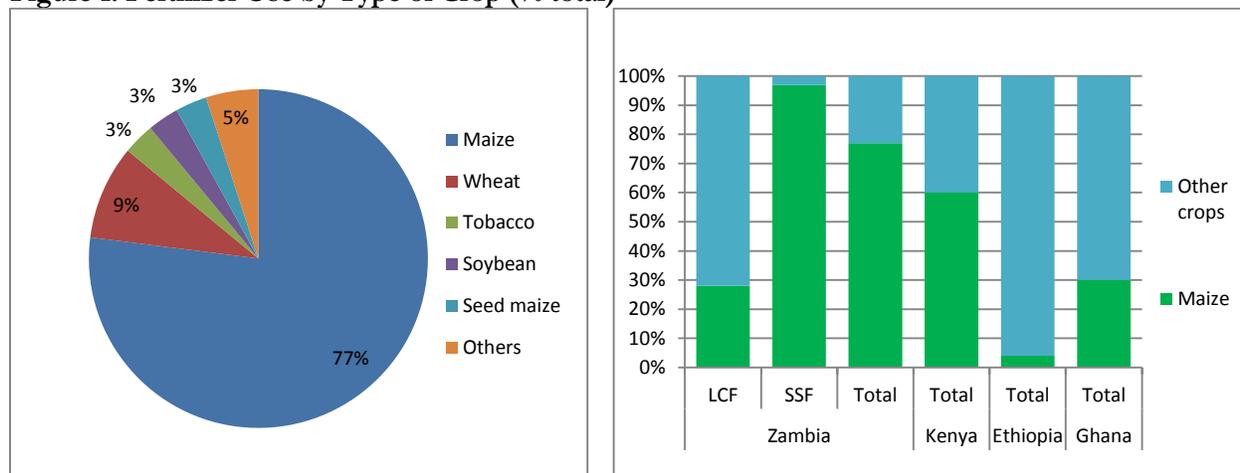
		Pn/Po=12.7 Subsidized prices (May 2012) Urea price (May 2011): US\$ 210/MT (@75% subsidy) Maize sold to FRA: US\$ 260/MT Price of nitrogen: US\$ 457/MT Pn/Po=1.76
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Source: Summary of indicators presented in the chapter.

3.1 Fertilizer Use in Zambia

Fertilizer use in Zambia has increased from 236,372 tons in 2009/10 to 300,414 tons in 2010/11. In terms of the total quantity available, most of the fertilizer (77 percent) is applied to maize. This practice contrasts with practices in some other countries in Africa, where fertilizer is used mainly for export cash crops. When the total quantity, however, is disaggregated by fertilizer use by small-scale farmers (SSFs) and large-scale farmers (LSFs), it is interesting to note that LSFs use higher quantities of fertilizer (72 percent) on “other crops,” while SSFs use 93 percent of available fertilizer on “maize.”

Figure 1: Fertilizer Use by Type of Crop (% total)



Source: Ministry of Agriculture and Livestock

Note: LCF = Large commercial farmers.

Zambia has considerable amounts of data on the amounts of fertilizer used. The Ministry of Agriculture and Livestock’s Early Warning Unit (MAL/EWU) collects data annually on total fertilizer use in the small-scale and large-scale farm sectors for 20 individual crops. Private firms that sell to the large commercial sector were of the view that the MAL/EWU data understate commercial fertilizer use, but they agreed that these data still provide a reasonable picture of overall demand trends. A summary of the MAL/EWU data for the 2009/10 and 2010/11 seasons is given in Table 6. Other crops not specifically identified in this table include barley, cassava, cotton, cowpeas, groundnuts, maize for silage, mixed beans, paprika, popcorn, rice, sorghum, soybeans, sunflower, and sweet potato (see Appendix 2 for details).

Table 6: Fertilizer Use by Crop, Fertilizer Type, and Farm Sector (two most recent farm seasons)

	Basal			Top Dress			Total			% total		
	LS	SS	Total	LS	SS	Total	LS	SS	Total	Basal	Top	Total
2009-10												
Maize	16,281	78,167	94,448	15,355	81,369	96,724	31,636	159,536	191,173	78%	84%	81%
Wheat	9,097	-	9,097	8,763	-	8,763	17,860	-	17,860	7%	8%	8%
Tobacco	3,298	3,074	6,372	1,036	2,219	3,256	4,334	5,293	9,627	5%	3%	4%
Soybean	6,589	55	6,644	1,794	21	1,815	8,383	76	8,459	5%	2%	4%
Seed maize	1,974	-	1,974	1,840	-	1,840	3,815	-	3,815	2%	2%	2%
Other	2,304	990	3,294	1,382	763	2,145	3,686	1,753	5,439	3%	2%	2%
Total 2009-10	39,544	82,285	121,829	30,170	84,373	114,543	69,714	166,658	236,372	79%	78%	79%
% Total	32%	68%	100%	26%	74%	100%	29%	71%	100%			
2010-11												
Maize	12,418	101,334	113,753	12,148	104,631	116,779	24,567	205,965	230,532	74%	80%	77%
Wheat	12,854	-	12,854	12,739	-	12,739	25,593	-	25,593	8%	9%	9%
Tobacco	3,583	3,045	6,628	1,128	2,246	3,373	4,711	5,290	10,001	4%	2%	3%
Soybean	8,214	70	8,284	1,674	20	1,693	9,887	90	9,977	5%	1%	3%
Seed maize	4,671	-	4,671	4,520	-	4,520	9,191	-	9,191	3%	3%	3%
Other	7,343	964	8,307	6,072	742	6,813	13,415	1,706	15,120	5%	5%	5%
Total 2010-11	49,083	105,413	154,496	38,280	107,638	145,918	87,363	213,051	300,414	100%	100%	100%
% Total	32%	68%	100%	26%	74%	100%	29%	71%	100%			

Source: Ministry of Agriculture and Livestock, Early Warning Unit.

Note: LS = large scale; SS = small scale.

Fertilizer application rates for all crops based on area planted are shown in Table 7. In terms of ABI indicator on fertilizer application rate, which measures the ratio of total fertilizer use to total arable land, the average fertilizer application rate in Zambia for 2010/11 is about 90 kg/ha. This rate is much higher than rates in many African countries and surpasses the target specified in the Abuja Declaration on fertilizer use (50 kg/ha). Further details for individual crops are given in Appendix 2.

Table 7: Aggregated Fertilizer Application Rates for Small-Scale and Large-Scale Farmers (2009–10 and 2010–11)

	Total ha planted	Total Fertilizer (tons)			Tons per Ha		
		Basal	Top	Total	Basal	Top	Total
Large-scale							
2009-10	141,533	39,544	30,170	69,714	0.28	0.21	0.49
2010-11	156,037	49,083	38,280	87,363	0.31	0.25	0.56
Small-scale							
2009-10	2,333,592	82,285	84,373	166,658	0.04	0.04	0.07
2010-11	2,358,674	105,413	107,638	213,051	0.04	0.05	0.09
Total							
2009-10	2,475,125	121,829	114,543	236,372	0.05	0.05	0.10
2010-11	2,514,711	154,496	145,918	300,414	0.06	0.06	0.12

Source: Calculated from MAL/EWU data.

Table 8 summarizes fertilizer application rates for selected crops in 50-kilogram bag basal application x 50-kilogram bag top dressing per hectare, which is how fertilizer application rates are often discussed. It is worth noting that FISP is designed to provide small-scale farmers enough fertilizer to use on maize at the rate of 4x4 50-kilogram bags per hectare. As shown, actual application rates by small-scale farmers are much less than these amounts. In large part, this is because the data are based on total area planted, including area planted with new hybrid and other types of seed. There is also a known tendency for small farmers to share FISP input packs and to apply the fertilizer more thinly than recommended. The 4x4 recommendation, in fact, is a yield maximizing recommendation and has not changed since the period before liberalization, so it is not based on the potential returns to fertilizer at prevailing prices.⁷ In this regard, private companies also expressed concern about the blanket use of Compound D (10:20:10) as basal fertilizer under FISP,

⁷ See World Bank (2010).

saying that this product is not well suited to many soil types in Zambia. In some high-rainfall areas, for example, soils are known to be very acidic and would benefit much more from lime than Compound D.

Table 8: Fertilizer Application Rates for Selected Crops (50-kg bag/ha)

	2010-11 (50kg bags/ha)			
	Large Scale		Small Scale	
	Basal	Top	Basal	Top
Maize for grain	5.6	5.5	1.5	1.6
Maize for seed	6.7	6.5	-	-
Wheat	6.8	6.8	-	-
Tobacco	9.4	2.9	3.5	2.6
Soybeans	4.0	0.8	0.1	0.0
Rice	-	-	0.0	0.1

Source: MAL/EWU.

3.2 FISP and Fertilizer Supply and Distribution in Zambia

Under FISP, fertilizer is distributed through district-level government authorities to members of independent farmer co-ops. Many of these co-ops have a decades-long history, whereas others were established more recently, sometimes for the purpose of gaining access to FISP inputs. In some cases, co-ops not specifically involved with maize production, such as dairy marketing groups or associations of vegetable producers, have also benefitted from FISP inputs, since their members also grow maize. Historically, the FISP and its precursor, the Fertilizer Support Program (FSP), have had a poor record of delivering inputs on time. An assessment of the 2007/08 program found that almost 70 percent of farmers did not get their inputs until after the start of the rains, and 33 percent received their inputs more than two months late (World Bank 2010).

Annually, the procurement of fertilizer is handled by the government through an open tender. Despite these competitive arrangements, all fertilizer contracts have been awarded to the same three companies since the program's inception, namely to the state-owned manufacturer (Nitrogen Chemicals of Zambia), Omnia Small Scale Limited, and Nyiombo Investments Limited. Program administrators have reported that the main reason for this outcome is that the other fertilizer companies were judged to lack the physical capacity to deliver the required volumes and/or could not mobilize the necessary finance.⁸ Unsurprisingly, the awarding of fertilizer contracts to the same private companies each year has led to complaints by firms excluded from the program. Some companies say that the tender specifications were designed specifically to prevent them from winning a contract. One such rule, for example, has been the requirement to supply granular (composite) fertilizer that is produced only overseas rather than blended fertilizer, which is manufactured locally from imported ingredients. Another requirement has been that suppliers had to have 50 percent of the fertilizer tendered for already in the country at the time of making their bid, which is impractical for small firms or indeed for any company that is not very certain of winning the government contract. Both rules on fertilizer procurement have been dropped from the current 2012/13 tender. Private sector companies estimate that in recent years, FISP has accounted for more than 95 percent of fertilizer supplied to smallholder farmers.

⁸ World Bank (2010).

3.3 Private Sector Participation in the Fertilizer Sector

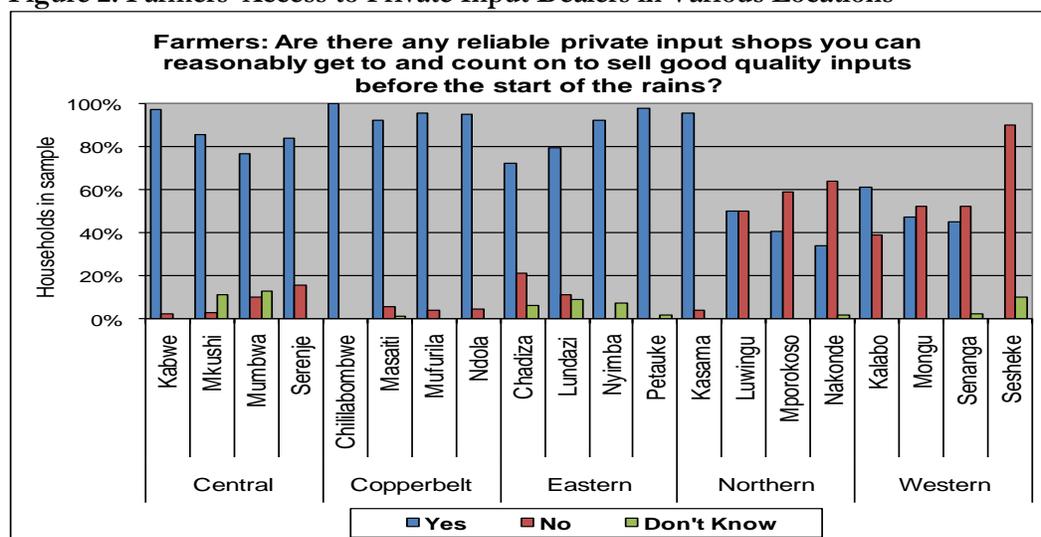
Currently, the fertilizer sector in Zambia consists of nine major importers, including two domestic blenders and one state-owned manufacturer. With regard to the distribution of nonsubsidized (private) fertilizer, some fertilizer importers have their own licensed agents in major towns and well-established farm areas. Large commercial farmers typically place advance orders directly with the importer or an agent in their area. In some cases, very large agricultural producers may even import their own fertilizer. At least one private company specializes in producing custom-blended fertilizer specifically formulated for each individual client's soil types. This firm now plans to extend operations to Tanzania and Mozambique. In addition, there are several private shops owned by individual traders who typically buy their stocks from importers for selling to smallholder farmers and other producers in their area.

Unlike some other African countries, in Zambia the presence of an organized and active agro-input dealer network is limited. Among the importers, an association exists, but its membership is limited. In rural areas, as FISP is active, fewer business opportunities currently appear to exist for local private agro-input dealers, although the situation may change with the introduction of the new e-voucher program to be piloted in 37 districts starting 2012/13. Despite the complaints about FISP and the tender process, most fertilizer companies interviewed for this study expressed renewed interest in the program. Under the pilot e-voucher mechanism, farmers will be free to choose any type of seed or fertilizer they wish from local private dealers. Firms previously excluded from FISP therefore had a very positive view of this development and said that with the voucher mechanism they could at last begin to compete for smallholders' business. The voucher system could also increase the number of local agro-input dealers and thus possibly improve access to and availability of fertilizer in rural areas.

3.4 Farmers' Access to Fertilizer

While it is clear that the large volume of subsidized inputs has had a negative effect on private sector opportunities in well-developed farm areas, a very different situation prevails in outlying areas, where there is still a strong case to say that private demand for fertilizer is not strong enough to attract commercial dealers. An indication of this situation is given in Figure 2, which depicts responses from 844 farmers asked whether they had any reliable private input shops that they could reasonably get to and count on to sell good quality inputs before the start of the rains. Even in Central, Copperbelt, and Eastern Provinces, where farmers mostly said they had access to reliable private input shops, the size of the private market has been undermined by FISP, to the point where FISP now accounts for over 95 percent of the fertilizer supplied to smallholder farmers.

Figure 2: Farmers' Access to Private Input Dealers in Various Locations



Source: World Bank 2010 (survey of 844 farmers in 2009, data for 2007/08 season).

On a national level, despite the expansion of FISP and increase in total fertilizer use, only 39 percent of smallholders use fertilizer (Table 9). This proportion is much higher than that found in most other countries in the region, however. Note also that over the years, access to fertilizer has increased in Zambia from 20 percent in 2001/02 to 39 percent in 2009/10. Access also varies by province; access is higher in Lusaka, Central, and Copperbelt Provinces than (for example) in Luapula and Western Provinces.

Table 9: Percentage of Smallholders Using Fertilizer

	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07	2007/08	2008/09	2009/10
Central	35.59	48.01	39.17	42.12	39.20	47.00	56.53	50.41	66.18
Copperbelt	31.73	33.97	36.61	39.06	42.52	46.54	46.14	44.61	58.06
Eastern	22.01	28.31	30.11	32.16	30.64	26.74	31.25	29.01	42.54
Luapula	10.20	14.29	12.79	7.57	11.28	14.38	12.16	14.00	16.45
Lusaka	34.16	51.60	65.75	64.40	55.57	49.27	52.09	48.20	69.07
Northern	18.74	22.42	21.09	20.32	21.41	35.87	31.44	30.93	37.34
Northwestern	11.79	10.73	18.08	11.56	18.49	21.73	18.59	18.26	30.34
Southern	26.30	40.50	38.64	27.93	25.96	33.42	36.78	33.47	41.33
Western	2.98	9.48	4.88	4.49	5.58	5.05	3.09	3.96	7.62
National	19.99	26.78	26.27	24.54	24.94	29.29	30.24	28.86	38.79

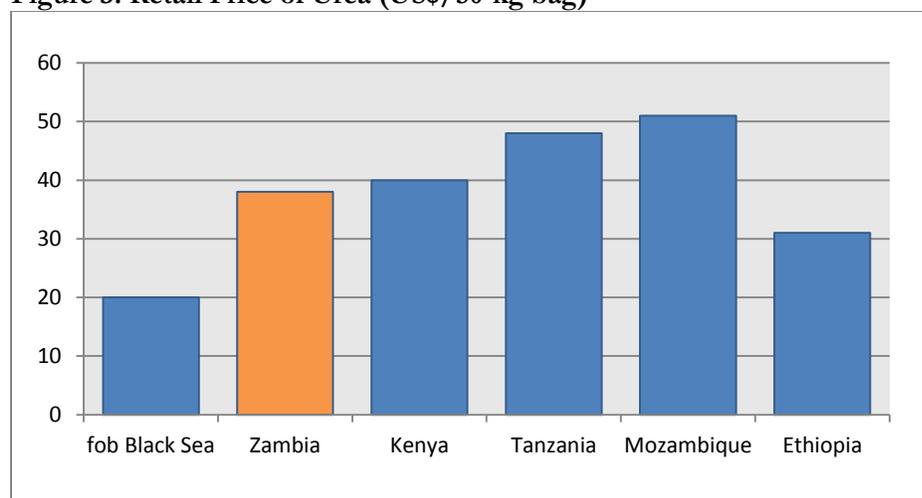
Source: FRSP (2011:108) cited as CFS, various years.

3.4 Fertilizer Prices and Profitability

Commercial prices of fertilizer in Zambia are quite competitive in comparison with prices in other countries in the region. In May 2012, the average retail price of urea was US\$ 38 per 50-kilogram bag (Figure 3), which is lower than in countries like Tanzania and Mozambique, which have sea ports. Fertilizer importers explain this difference by noting that significant volumes of fertilizer come to Zambia from South Africa, including a certain portion transported via railway, which is much less

costly than transporting by truck. It could also be that commercially sold fertilizer is bought mainly by large-scale farms that are more likely to buy in bigger bulks, which would reduce the unit price of fertilizer.

Figure 3: Retail Price of Urea (US\$/50-kg bag)



Source: For Zambia, field interviews; for other countries, ABI country reports)

Despite the prices being competitive, the nutrient/output ratio based on commercial prices is rather high in Zambia at 12.7 (Table 10). On the other hand, the nutrient/output ratio calculated on subsidized input and output prices is very reasonable at 1.7. This implies that at commercial prices fertilizer use is not affordable, unless the cost build-up that contributes to current fertilizer prices (specifically, the urea price) is reduced, or unless the output price for maize improves.

Table 10: Nutrient/Output Ratio {Pn/Po} for Maize in Zambia

Price (US\$/MT)	
Based on Commercial Prices	
Average. wholesale price for maize (May 2011)	130
Average price for urea (May 2011)	760
Price of nitrogen	1,652.2
Pn/Po	12.7
Based on Subsidized Prices	
Average wholesale price for maize (May 2011)	260
Average price for urea (May 2011)	210
Price of nitrogen	456.5
Pn/Po	1.7

Source: Author's calculation, based on data from Agriculture Market Information Center, MAL.

Chapter 4: ACCESS TO FARM MACHINERY AND TRACTOR HIRE SERVICES

Zambia is a large country of about 75 million hectares, of which 23.4 million are defined as agricultural land. In 2010/11, 2.35 million hectares were planted to major crops. Among small-scale farmers, land preparation as well as planting is performed manually, and there is very little access to tractor hire services. The Supplemental Survey (2007/08) shows that around two-thirds of producers cultivate their land using hand hoes against one-third using animal traction. Among the medium-scale farmers (also referred as “emergent farmers” in Zambia), a few may own tractors and offer custom tractor hire services, but this practice is not common. On the other hand, large-scale farms use tractors for most farm activities, but in terms of scale this sector is not very big, with 1,500 farms in Zambia. ABI has used tractors as a proxy to assess the degree of mechanization because for agriculture to be commercially developed, it is critical that use of tractors is one of the key inputs to increase agricultural productivity.

Table 11: Summary Observations on Tractor Use in Zambia

Success Factor	Indicators	Results of Indicators	Data Source
Use of Mechanization	Total no. of tractors per 100 km ² of arable land	20.7 (own estimate, based on uncertain no. of tractors)	Own estimate based on 6,000 total tractors estimated and 290.34 100 km ² total arable land reported by FAOSTAT (average 2001–2009).
	Average HP per 100 km ² of arable land	1,343 HP per 100 km arable land Most popular model = 65 HP x 6,000 total tractors = 390,000 total HP ÷ 290.3 100 km ² arable land = 1,343 HP per 100 km ²	Own calculations from interviews with tractor dealers (most popular model = 65 HP) and 290.34 100 km ² total arable land reported by FAOSTAT (average 2001–2009).
Mechanization Prices	Cost of plowing 1 ha (rental rate)	Plow/rip = US\$ 125/ha rental, excluding fuel (4.5 liters or about US\$ 6.75/ha) Plant/spray = US\$ 50/ha rental, excluding fuel (2–3 liters or about US\$ 3.75/ha) Transport = US\$ 50/hour, excluding fuel (5–6 km per liter @ US\$ 1.50/liter) <i>n.b. Diesel costs around US\$ 1.44/liter.</i>	Interviews with private dealers (incl. projects that promote rental services).
	Tariffs and taxes on tractors and tractor spare parts	All sizes of tractor: 0% duty; 0% VAT* Tractor attachments: 0% duty; 0% VAT Tractor spare parts: 15% duty; 16% VAT Hand-sprayers: 15% duty; 16% VAT <i>* New policy since late 2011, previously only zero duty/zero VAT on tractors up to 90 HP.</i>	Dealer interviews and Zambia Revenue Authority online tariff guide.
	Price of a new tractor	US\$18,500–20,000 for 65 HP 2x4 US\$ 22,000–25,000 for 65 HP 4x4	Dealer interviews.
	Percent of total	100% private (including +/- 15%	Interviews with private

	tractors imported by the private sector	through project-backed loans); government does not import tractors unless for own use. <i>n.b. Implement dealers expressed concern about possible donor projects that may inject new tractors at below market prices.</i>	dealers (incl. projects that promote rental services).
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Source: Summary of indicators presented in the chapter.

4.1 Government Programs on Mechanization

Following the introduction of economic liberalization policies in the 1990s, the government stopped implementing any large-scale program for providing tractor services to smallholders. However, the National Agriculture Policy (2004–2015) recognizes that inadequate farm power and mechanization is one of the constraints on agricultural development and includes farm mechanization as a subsector of focus for the government. Among the strategies that the plan proposes is the promotion of more private sector activity in supplying and distributing farm power and mechanization for smallholders and the encouragement of private agricultural machinery-hire operators. From time to time when the government receives grants, it does finance projects on tractors, two of which are currently operational under funding from the Government of Japan and the European Union (EU), along with the Food and Agriculture Organization (FAO). The Japan International Cooperation Agency–supported program (2009–2013) has so far financed 20 Japanese-made Kubota tractors that are provided to Farmer Training Centers in five provinces on interest-free loans for four years. The EU and FAO program financed 10 tractors and was managed by Zambia National Farmers Union (ZNFU). Informants reported that the EU project was generally problematic with a large number of borrowers defaulting on their loans, in part because they received too many pieces of equipment and had too high a credit burden. The EU program is currently on hold.

4.2 Private Sector Participation in the Mechanization Sector

In the private sector, to improve smallholders’ access to machine services, various projects are underway in out grower schemes. Dunavant Cotton is managing the first of these with financial support from the Bill and Melinda Gates Foundation, United States Agency for International Development (USAID), and World Food Programme (WFP). The tractor program aims to serve smallholders participating in the Donavan’s out grower program. Dunavant is Zambia’s largest ginning company and currently provides inputs for cotton and soybeans (to be grown in rotation with cotton) to around 170,000 smallholder farmers on an outgrower basis through 1,700 village-based distributors.⁹ The Dunavant tractor program is now in its fifth year and has so far managed to put 34 tractors on the ground through a revolving fund whereby “lead or emergent farmers” are given credit and training in tractor operation and management of local hire services (mainly for tillage and transport). The participating farmers are required to pay a 20 percent down payment, and the loan period is for three years, with an interest rate of 12.5 percent. This rate is much lower than the commercial bank rates of at least 20 percent. Farmers in the out grower program can pay for the tractor service through a deduction from their cotton payment, which is refunded to the operator. USAID provided management training and helped to get the program off the ground; WFP’s

⁹ In total, Dunavant estimates there are at least 400,000 outgrower cotton farmers.

Purchase four Progress (P4P) program and the Bill and Melinda Gates Foundation provided the original finance that enabled establishment of a revolving fund. Dunavant reports that it is looking to expand the program with commercial credit from Zambia National Commercial Bank (ZANACO).

John Deere is managing a second tractor program through its local distributor AFGRI in cooperation with USAID and the Conservation Farming Unit of ZNFU. The International Finance Corporation (IFC) was originally part of the John Deere program but has disengaged.¹⁰ This program works in a very similar way to the Dunavant program. The farmer/owner gets a loan from AFGRI together with management training and is required to provide 20 percent equity finance or around US\$ 9,000 against a US\$ 45,000 total loan that covers delivery of a 45 HP tractor, various attachments (including a ripper and GPS for infield navigation), three-year service package, and insurance. The loan period is three years and interest is 14 percent.

Against this background, respondents had a positive view of the competitive environment for private tractor businesses to operate, but they expressed concern that new, highly concessional tractor programs (not based on commercial credit terms like the ones described in the previous paragraphs) could be introduced and undermine private sector growth. While no specific plans exist for any such program, dealers identified the potential for donated tractors being introduced from Japan and/or China as a specific risk. They expressed further concern about the risk of inconsistent decisions and for policies outside the tractor sector, including sudden changes in FRA prices for maize and the distorting impact of FISP subsidies.

4.3 Tractor Use in Zambia

Despite the enabling environment for the private sector and some promising initiatives in out grower schemes, there is still huge unmet demand for tractor services in Zambia, especially among smallholders. Tractors in Zambia are all imported, and because the country is landlocked, retail prices can be higher than in other countries. Tractor rental rates of US\$ 125 per hectare for plowing are very high. Duties on tractor spare parts (15 percent import duty plus 16 percent VAT), high fuel costs, and expensive loans makes tractors expensive to operate and maintain.

There is no reliable figure for the total number of working tractors in Zambia, but it is estimated at around 6,000 tractors, which means that there are about 21 tractors per 100 square kilometers of arable land. In comparison to other pilot countries, this number seems high, but for Zambia it must be recognized that the tractors that are available are used mainly by large and corporate farms, whereas smallholders' access to mechanization services is still extremely limited in most parts of the country. Zambia has about 1,500 large farms, and most use a couple of tractors (Table 12). More than 60 percent of farms that use tractors are located in two provinces (Central and Southern).

Overall, the mechanization sector has been expanding in Zambia, and currently several importers distribute John Deere, Massey Ferguson, Mahindra, and Tafe tractors (Table 13).¹¹ From 2000 to

¹⁰ IFC has been financing a three-year project (2010–12), the Zambia Emergent Farmers Finance and Support Program, with a parent loan to ZANACO that aims to facilitate access to finance for 150 emergent farmers with an average loan size of US\$ 30,000. IFC decided to discontinue financing tractors, having realized that adequate donor funds are available in the market. IFC plans to reassess the market as the project is completed in 2012 to determine whether to engage in the sector again.

¹¹ Tafe, a company based in India, manufactures Massey Ferguson, Eicher, and Tafe brand tractors.

2007, on average, 484 tractors were imported annually (FAOSTAT).¹² In the private sector over the past three years, total imports of new tractors increased from 103 units in 2009 to 290 units in 2010 and 347 units in 2011.

Table 12: Number of Large-scale Farmers by Province

Province	Number
Central	534
Copperbelt	142
Eastern	68
Luapula	67
Lusaka	164
Northern	89
Northwestern	12
Southern	411
Western	42
Total	1,530

Source: FSRP 2011.

Table 13: Tractor Imports (number and value)

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Total agricultural tractors imported	254	276	827	685	610	431	304	*	103	290	347
Import value (US\$ 000s)	3,003	3,752	10,543	10,774	9,752	6,513	9,145	*	*	*	*

Source: FAOSTAT. Data for 2009–2011 based on interview with dealers.

*=No data.

¹² FAOSTAT does not report data from 2008 onwards.

Chapter 5: ACCESS TO AGRICULTURAL AND AGRI-ENTERPRISE FINANCE

High interest rates and limited access to commercial credit are recognized problems in Zambia. The Bank of Zambia (BOZ) reports that across the entire economy in the third quarter of 2011, 67 percent of firms used retained earnings for long-term investment and working capital against 20 percent that borrowed from commercial banks, 7 percent that used partners' equity, and 5 percent that obtained finance from various other sources, including trade finance.¹³ Many of the bigger companies interviewed said they relied on offshore finance from their parent company rather than the local banking system. In April 2012, the lending rate for commercial credit offered by the banks was an average 23.3 percent (BOZ 2012). It is said to be higher if financing is offered from nonbank financial institutions like microfinance institutions (MFIs).

Table 14: Summary Observations on Finance in Zambia

Success Factor	Indicators	Results of Indicators	Data Source
Use of Agricultural Finance	Inventory of lenders to agricultural production and agribusiness	19 registered commercial banks in Zambia (May 2012), of which 6 account for +/- 93% of agricultural lending equal to ZMK 2,068,328 million (US\$ 392.05 million).	BOZ (see Appendix 1 for complete inventory of commercial banks and other financial institutions).
	Percent of commercial bank lending to agriculture and agri-enterprises	17.1%	BOZ. Note that the figures for "agricultural lending" include loans to forestry, fishing, and hunting (though agriculture is said to account for a significant majority of credit).
	Percent of finance by ag-enterprises and commercial farms with outstanding loan (if recent survey exists)	Data not available	BOZ and commercial bank interviews.
Efficiency and Cost of Agricultural Finance	Commercial bank average nominal interest rate on deposits	<u>April 2012</u> Savings accounts = 4.3%	BOZ website (<i>Statistics Fortnightly, fortnight ending 5 April, 2012</i>) (Table 7). <i>Includes data going back to Jan. 2010.</i>
	Commercial bank average nominal interest rate on loans to agriculture	<u>April 2012</u> Weighted lending base rate = 16.3% Lending margin = 7% Lending rate = 23.3% <i>n.b. In an effort to reduce borrowing rates, BOZ recently announced a flat 9% base rate for all types of loans. Banks, however, are still free to add their own margin and reported they do not foresee any immediate change in</i>	

¹³ BOZ, *Quarterly Survey of Business Opinion and Expectations*, September 2011, p. 10.

		<i>final lending rates as details of the BOZ policy are not yet clear.</i>	
	Percent of non-performing loans (NPLs) for agriculture	10.4% of commercial bank loans (no data for microfinance institution loans) <i>n.b. Loans classified as NPLs if not serviced for 90 days.</i>	BOZ special request.
Other Financial Services and Regulations	Existence of a warehouse receipt system (0-5 scale) ^a	1 (Act recently approved, waiting for implementation)	BOZ and commercial bank interviews.
	Existence of a law on leasing (Y/N)	Yes. Covered by Banking Act. <i>n.b. Banking Act lists leasing as a financial service, but there is otherwise no specific “law on leasing” (although there is a law on hire-purchase).</i>	BOZ interview.
	Presence of a collateral registry (Y/N)	No. No consolidated registry, but some recent discussion on maybe setting one up.	BOZ interview.
	Law on movable assets (Y/N)	Yes. Covered by Banking Act. <i>n.b. Zambia’s legal framework permits institutions to accept movable assets as collateral but financial institutions are hesitant to accept such collateral and it is not widely used.</i>	BOZ interview.
	Presence of a credit reference bureau/service that lenders can access (Y/N, 0-5 scale) ^b	Yes. By law, all banks must show they did a credit search before approving a loan. Yet points of sale (POS) data are not included.	BOZ and commercial bank interviews.
Private Sector Advocacy	Private sector advocacy (scale 0-5) ^c	Average result (3 interviews) Zambia Banker’s Association = 4.0 <i>n.b. Bankers association acknowledged by BOZ and commercial banks to have clout, but also reported that policy changes take long to implement.</i>	BOZ and commercial bank interviews. <i>Limited sample size</i>

Source: Summary of Indicators presented in the chapter.

a 0 = no WRS in place; 1 = WRS under development; 2 = warehouse receipts laws/regulations developed and passed/approved; 3 = warehouse receipts laws/regulations implemented by commercial banks; 4 = warehouse receipts accepted by commercial banks (farmers/traders able to use as collateral); 5 = WRS expands (increased number of banks and certified warehouses, increased grain stored in certified warehouse against receipts issued and used as collateral).

b 0 = Credit reference bureau (CRB) does not exist; 1 = CRB planned, under design; 2 = CRB underway, but used by small number of financial institutions with limited number of farms/firms covered; 3 = most commercial banks participate; 4 = widespread use with POS additions (stores/suppliers that sell goods on credit); 5 = most commercial farms and firms covered in reporting system on bank credit histories and POS on credit.

c 0 = no such group; 5 = highly respected, often consulted by government, with notable policy victories under the belt.

5.1 Financial Sector in Zambia

There are currently 19 commercial banks in Zambia. The main lenders to agriculture (alphabetical only) are Barclays, Citibank, Finance Bank, First National Bank, Stanbic Bank, Standard Chartered, and ZANACO. ZANACO’s market share in the agricultural sector is about a third of the total lending portfolio, followed by Stanbic and Barclays. Total outstanding loans to agriculture by

commercial banks equal ZMK 2,068,328 million (US\$ 392.05 million) or 17.1 percent of all commercial bank lending. Various MFIs currently provide a further ZMK 125,427 million (US\$ 23.77 million) credit to agriculture, equal to 10.1 percent of all loans and advances by these institutions. Total agricultural lending (banks + MFIs) = ZMK 2,193,755 million (US\$ 415.82 million) or 16.5 percent of all credit from commercial banks and MFIs combined. This share is higher than shares in ABI comparator countries. Table 15 shows the type of bank and nonbank financial institutions that exist in the Zambian financial sector.

Table 15: Number of Banks and Nonbank Financial Institutions under BOZ Supervision

	2005	2006	2007	2008	2009	2010	2011*
Banking							
- Commercial banks	13	13	13	15	18	18	19
Nonbank financial sector							
- Leasing companies	8	8	12	10	12	11	8
- Building societies	3	3	3	3	3	3	3
- Bureau de change	32	31	35	39	44	49	55
- Savings and credit banks	1	1	1	1	1	1	1
- Microfinance institutions	4	6	8	21	25	25	32
- Development finance institutions	1	1	1	1	1	1	1
- Credit reference bureau	0	1	1	1	1	1	1
<i>Total no. of licensed entities</i>	<i>62</i>	<i>64</i>	<i>74</i>	<i>91</i>	<i>105</i>	<i>109</i>	<i>120</i>

Source: BOZ.

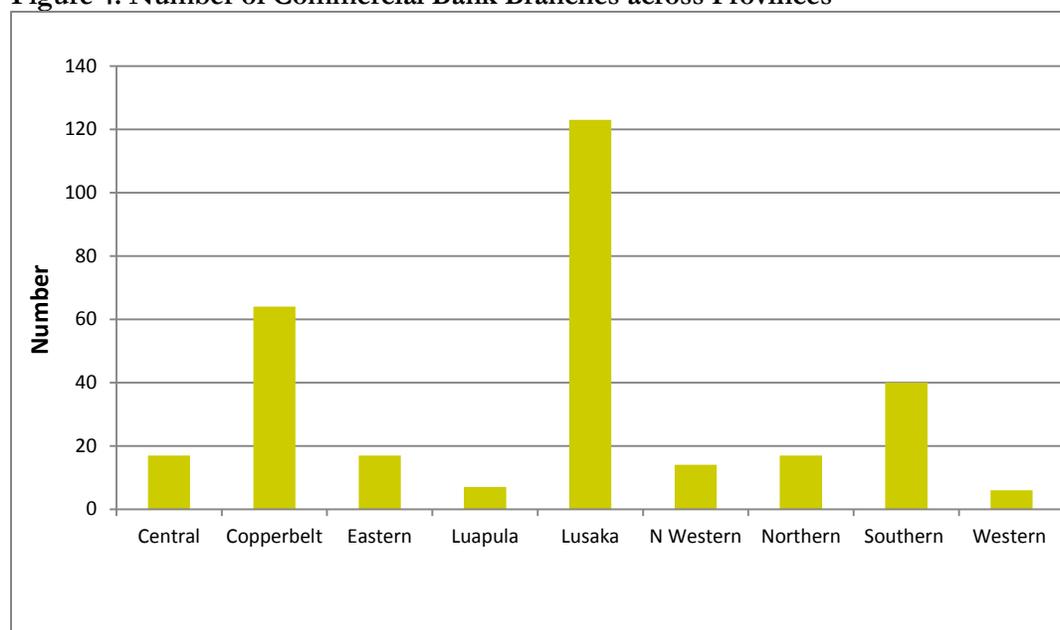
* As of end 2011.

5.2 Access to and Availability of Agricultural Credit

Despite the size of the portfolio and the sizeable number of financial providers, very few firms in Zambia borrow from formal institutions. According to the Zambia Business Survey (2010),¹⁴ only 2.4 percent of micro, small, and medium enterprises have taken loans. In contrast, 45 percent of the large businesses surveyed used credit. Poor physical access to banking infrastructure is considered to be a constraint on banking access. Most of the branches of commercial banks are located in cities. Lusaka and Copperbelt, the two most urbanized provinces, have 187 branches (61 percent) operate of the total 305 branches in the whole country (Figure 4).

¹⁴ The Zambia Business Survey was a nationally representative survey of 4,800 micro, small, and medium enterprises. The sample included enterprises (formal and informal) in all regions of Zambia and notably covered enterprises in rural areas, including in the agricultural sector.

Figure 4: Number of Commercial Bank Branches across Provinces



Source: BOZ.

In Zambia, to receive a loan from a commercial bank, the borrower must normally be able to provide 100 percent collateral (usually in the form of land backed by an independent valuation report, but sometimes also in the form of the asset being borrowed for); three years of audited financial records, including profit and loss statements, cash flow statements, and balance sheets; proof of business registration; and a detailed repayment plan for the loan, together with other documents as requested by the bank. These requirements make it very difficult for smallholders to access finance, and the current portfolio of bank investments in agriculture primarily consists of bigger commercial farms. Banks admitted they generally do not loan for greenfield investments in agriculture and usually deal only with trade-related businesses. Banks also state that there is a culture of nonpayment in Zambia, which (coupled with the risks associated with financing agriculture) does not incentivize the banks to offer services to the sector. In addition to constraints on the supply side, there is also the issue of demand-side barriers among smallholders who are not regarded as bankable owing to their low incomes¹⁵ and lack of awareness about financial services.

The status of the market for agriculture finance in Zambia is elaborated very well in an important study by ZNFU/PROFIT (Taylor 2009), which state that:

“Zambia’s market for agricultural finance is fundamentally dysfunctional. From the farmers’ perspective, credit is scarce and expensive and heavily skewed towards the larger, corporate sector. Loan terms are often too short to accommodate the long term nature of agriculture, and the processing of loan applications by banks often takes too long. These problems cause an already-risky sector to become even riskier. From the bankers’ perspective, agricultural lending is both risky and expensive. They are reluctant to lend without very high collateral coverage and a high risk premium. When they do lend, they often lose money. Non-performing loans in the agricultural sector now exceed 37%, against 13% across all other sectors of the economy. This high level of distress represents a serious loss for banks – one which will make them even more reluctant to lend in future.

¹⁵ In Zambia, it is estimated that about 83 percent of rural inhabitants are poor and that 71 percent of the rural poor are extremely poor (IFAD).

Thus, the agricultural finance market is caught in a self-perpetuating cycle of risk and loss, which benefits no one.”

The report further elaborates that in addition to risks associated with agricultural production – weather, macroeconomic instability, and price volatility – three additional factors account for the fundamental problems facing Zambia’s agricultural finance market: (i) a highly-risky lending environment caused largely by unpredictable Government intervention as well as weaknesses in the legal framework; (ii) limited understanding of agricultural markets and limited expertise in agricultural finance among most banks and other financial institutions; and (iii) poor risk management practices and limited financial analysis and management capabilities within the agricultural sector.

As for Government intervention, the agriculture sector has been affected from time to time by adhoc export or import bans and changes in duties. This has led to uncertainties on supply and demand of agricultural goods, negatively impacting the credit markets. In Zambia, Government plays a major role in agricultural marketing whereby FRA purchases staple crops like maize from all around the country. Through this arrangement though farmers receive higher prices and have a dependable buyer, due to the inefficiency of the system, many farmers are paid late for their sales. This has also affected the credit cycles of farmers who may have had loans for inputs and are unable to pay if off due to delayed payment for their output.

5.3 Special Mechanisms for Promoting Agricultural Finance

Some promising recent initiatives are worth noting in discussing agriculture finance. ZANACO launched the so-called “Lima Credit Scheme” about two years ago together with ZNFU.¹⁶ Under the program, small farmers receive seasonal credit for maize through their local ZNFU branch, known as a District Farmers Association (DFA). Under the Lima Scheme, loans are given out on a group basis and group members are jointly liable for repayment. Borrowers are required to put forward 50 percent cash collateral and until now have been charged 21 percent interest, including a 16 percent base rate plus 5 percent for insurance. Loan funds are disbursed in kind through the input suppliers, who deliver the inputs to the DFA for onward distribution to the farmer group. Bankers at ZANACO say the repayment rates have been nearly 100 percent.

An initiative financed by IFC is the Zambia Emergent Farmers Finance and Support Program (2010–2012). Similar to the Lima scheme, the program operates in partnership with ZANACO and ZNFU. In addition to equity financing, IFC is helping build ZANACO’s capacity to develop agri-lending products and train agri-loan officers. So far, US\$ 4.7 million has been disbursed to 171 emergent farmers (land ownership of 2–20 hectares) for inputs (seed, fertilizer, chemicals, and tractors). The program offers both short-term (6–12 months) and medium-term (12–36 months) loans, and the average loan size is US\$ 37,000. Other than these two programs, there is no real opportunity for smallholder farmers to access finance, except in cases where supply chain finance is available. In formal out grower schemes in the cotton, tobacco, and a few other value chains, as well as in agricultural retail related to seed production, supply chain financing is prevalent where the supplier is a large lead firm that purchases inputs in bulk and provides it to smallholders. Informal schemes are also common among smallholders and grain traders, where the traders provide inputs

¹⁶ In Zambian terminology, a *lima* is a quarter of a hectare and is more generally used to refer to small farm plots.

(seed, chemicals, fertilizer) at the start of the season and deduct the costs of inputs from the crop harvested (Beggs 2010).

Additional initiatives to improve access to finance for agriculture that are important to note include the development of a warehouse receipt program in Zambia. Though the act was recently passed, even without a legal framework, initiatives started as early as 2001 when the Zambia Agriculture Commodity Agency, a nongovernmental organization, was formed with support from USAID, the Natural Resources Institute, and International Fund for Agricultural Development. The Zambia Agriculture Commodity Agency inspected and certified warehouses, and at its peak, during 2004–05, the agency certified 105,000 tons of capacity. It also had grain deposits of 65,000 tons, with US\$ 2 million of finance advanced against receipts for 58,000 tons. What is important to note here is that very little (1,500 tons) of the deposits came from smallholders, and the largest financed deposit was donor-imported grain. Due to management issues and an end to donor funding, the agency ceased operation in 2006.¹⁷ Consequently, in 2007, Zambia formed an Agriculture Commodities Exchange (ZAMACE), which now has an ownership of 15 member brokers. ZAMACE has created a platform for commodity trading. It has issued guidelines for grades and standards and has been operating as an agency to inspect and certify warehouses. Currently, ZAMACE is operating on a limited scale and is waiting for implementation of the regulations of the amended Agriculture Credit Act 2010. Given government intervention in the output market (price setting and purchases of staple crops like maize),¹⁸ it has been challenging for ZAMACE to attract buyers and sellers, but with an improved legal framework, more support is expected from the public as well as the private sector.

Zambia has a private Credit Reference Bureau that has been operating for several years. BOZ requires all banks to show that they did a credit search before approving a loan. Most banks are complying and using the system, although a few have participated only to a limited extent so far. Beyond the banks, the system has not been able to collect point-of-sale transactions covering credit information from retailers, trade creditors, utility companies, and so on. Zambia has no unified collateral registry yet, but a paper on making a unified registry operational has been drafted. The draft is currently being reviewed by selected stakeholders for submission to the government by the end of 2012. In the absence of a unified collateral registry, the land registry at the Ministry of Lands can provide information on land, while the Companies Act allows access to information on corporate assets that are used as collateral if a company is registered with the Patents and Companies Registration Agency. As for the transparency of credit information, a private credit reference bureau has been operating since 2006. BOZ requires both bank and nonbank financial institutions to submit both positive and negative information, but so far many financial institutions are submitting only negative information, and the coverage still remains limited; less than 5 percent of the population had a credit record as of June 2011 (OPM 2012).

¹⁷ There were other factors, one of which was that a warehouse receipt was not recognized as a document of title under the Agricultural Credit Act 1995. There was also limited “buy-in” from the financial sector (Tembo 2011).

¹⁸ FRA purchases maize at above market prices, with which traders cannot compete. In certain years, FRA has purchased almost all of the maize produced in Zambia. In 2011, FRA data showed that it purchased 53 percent of domestic maize production.

Chapter 6: COST AND EFFICIENCY OF TRANSPORT (i.e. Roads) IN ZAMBIA

Because Zambia is a large, landlocked country, transport costs figure very prominently in agricultural prices. High costs lead to higher production costs and reduced competitiveness in foreign markets. Backhaul rates on inland freight for exports via international ports in Dar es Salaam and Durban are often available at around 22–25 percent of the cost for frontload imports. Rail traffic is of minor importance in Zambia. Most domestic lines are in very poor condition, and there is a shortage of rail cars suitable for grain or other agricultural commodities.¹⁹ The TAZARA railway between Kapiri Mposhi and Dar es Salaam is also in poor condition but is still heavily used, especially by the mining sector. A similar situation exists with Zambia Railways, which connects Zambia to its border with Zimbabwe for freight that is transported between South Africa and Zambia.

Table 16: Summary Observations on Transport in Zambia

Success Factor	Indicators	Results of Indicators	Data Source
Cost of Transport	Price per MT per km on main and secondary routes	US\$ 0.11/MT/km on main routes US\$ 0.13/MT/km on secondary routes <i>n.b. Reduce by 66% if able to negotiate backload deal.</i>	Transporter interview.
	Cost to ship a 20' and 40' container load of inputs and outputs (US\$ per ton)	<u>Road from Dar es Salaam or Durban (front load)</u> 20' = US\$ 3,200; 40' = US\$ 6,000 <u>Road to Dar es Salaam or Durban (back load)</u> 20' = US\$ 2,500; 40' = US\$ 4,500 <u>Onward sea freight to/from Europe (add to road rates)</u> 20' = US\$ 3,500; 40' = US\$ 5,250 20' max 14 MT gross; 40' max 28 MT gross (incl. container)	Transporter interview.
Transport Infrastructure	Rural Access Index: % of people within 2 km of a road	64% (2003 model) 16.8% (GIS)	World Bank (2006); Africa Infrastructure Core Diagnostics Database.
	Logistics Performance Index	Rank = 138 out of 155 countries Score = 2.28 out of 5 (1 = worst, 5 = best) % of highest performer = 41.2	World Bank (2010a).
Regulatory Environment	Number of days required to (a) register a truck for hauling agricultural products and (b) obtain a license for hauling agricultural products	(a) 21 days for registration, including road service license (b) No special license required for hauling agricultural products <i>n.b. Further breakdown (composition) of time estimate not available.</i>	Transporter interview.
Private Sector Perceptions	Perceptions of truckers on transport	Overall average = 1.7 Quality of primary trunk roads = 2.3	Transporter survey (<i>Limited</i>)

¹⁹ There are no bulk handling facilities for grain in Zambia. All commodities must be packed in bags.

infrastructure (0-5 scale: 0 = very bad, 5 = very good)	Quality of secondary roads = 1.7 Quality of tertiary (feeder) roads = 1.0 Density of road network (ability to reach rural areas) = 0.7 Maintenance and periodic upgrading by government = 0.7 Degree and effectiveness of government regulation of transport providers = 2.0 Extent of unofficial/quasi-official harassment = 3.7	<i>sample size)</i>
Perceptions of truckers on ease of entry into trucking of foodstuffs (0-5 scale: 0 = disagree strongly, 5 = agree strongly)	Overall average = 4.0	
Perceptions of truckers on the competitiveness of transport services (0-5 scale: 0 = disagree strongly, 5 = agree strongly)	Overall average = 3.6	

Source: Summary of indicators presented in the chapter.

6.1 Zambia's Road Network and Its Funding Status

Zambia's core road network consists of trunk, main, district, urban, and feeder roads. In 2012, the network covered 40,454 kilometers of core roads. In terms of length, primary feeder roads (14,333 kilometers) and district roads (13,707 kilometers) predominate. In Zambia, investments in road construction and development of efficient transport services face the with a challenge of relatively low population density; Zambia's total population of 12.9 million people is spread over a land area of 752,618 square kilometers, giving an overall population density of just 17 people per square kilometer. This figure can be compared with 126 people per square kilometers in Malawi, 47 in Tanzania, and 32 in Zimbabwe, meaning that it is relatively more expensive on a per capita basis to develop roads and other transport services in Zambia than in regional Comparator countries.²⁰ Even so, Zambia has made major progress with its main trunk road network, along with networks that provide regional and national connectivity, linking the provincial capitals to Lusaka and Lusaka to main international border crossings. Zambia has also successfully operated a road fund that has been providing stable allocation of resources to the sector. It is one of the few countries in the region with a road sector budget in excess of what is needed to maintain the main road network and adequate to address the rehabilitation backlog (World Bank 2011).

Table 17: Road Network in Zambia

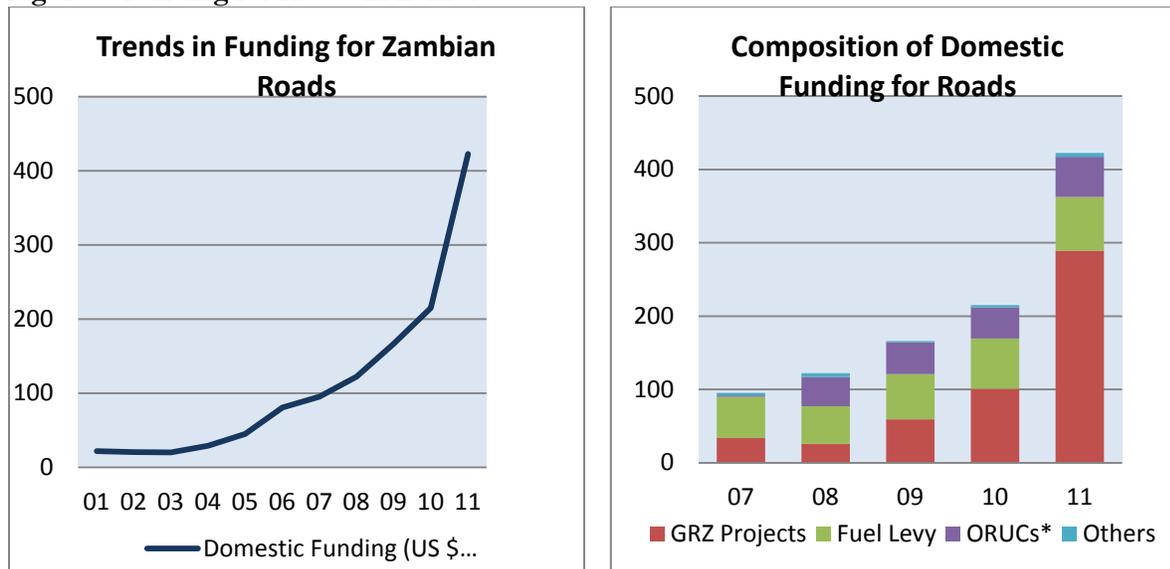
Road Category	Core Road Network (km)	Percentage
Trunk	3,116	8%
Main	3,701	9%
District	13,707	34%
Urban	5,597	14%
Primary Feeder	14,333	35%
Total	40,454	100%

Source: Ministry of Transport, Works, Supply, and Communications, 2012

²⁰ Own calculations from World Bank data.

In 2007, Zambia spent US\$ 95.19 million of its domestic funds on roads; road expenditures had increased nearly four times to US\$ 422.56 million by 2011. During the same period, the fuel levy also increased from US\$ 56.22 million to US\$ 73.41 million (Figure 5). Still, the levy (which is one of the main sources of revenue for the Roads Fund that finances maintenance) is a small portion of the road sector budget and covers about a third of the domestic resources for 2011 (MoT 2012).

Figure 5: Funding for Roads in Zambia



Source: National Road Funds Agency 2011.

* ORUCs=Other Road User Charges (license fees, transit charges etc.)

6.2 Rural Access to and Quality of Roads

Despite the increased investments in the transport sector in Zambia, access to rural areas is poor. According to GIS mapping data, only 16.8 percent of people in rural areas live 2 kilometers from an all-season road.²¹ A separate study based on the 2009/10 Crop Forecast data with a nationally representative sample of over 14,000 small- and medium scale farm households has more promising findings. The study found that over 50% of smallholder farmers in Zambia live within 3 km of a feeder road that is accessible by vehicular transport. The same study also found that there is a high degree of correlation between the distance traveled to the point of maize sale and the distance to the nearest place where vehicular transport can be accessed. Proximity to feeder roads was therefore found to be an important determinant of traders’ willingness and ability to enter into otherwise remote areas to provide markets for smallholder farmers’ surplus production (Chapoto and Jayne 2011). But, in Zambia, even when roads are available, these tertiary or “feeder” roads are in very poor condition. Many become impassable during the wet season. The Road Condition Survey of 2011 showed that 34 percent of feeder roads were in poor condition (Table 182). For the agricultural sector, these roads are critical and add to the cost of agricultural inputs (provision of seed, fertilizer) and outputs.

²¹ AICD national database, downloadable from <http://www.infrastructureafrica/aicd/tools/data>.

Problems with Zambia’s limited transport infrastructure have a clear impact on agribusiness. Due to recent favorable weather and input subsidies, for example, Zambia currently has the world’s largest stock of non-genetically modified white maize equal to around 1.8 million tons held in FRA and other storage depots scattered around the country. While this maize is in high demand in Kenya and other East African countries, the WFP reports that limited and inaccessible roads and rail capacity mean that it is physically possible to export only around 30,000–50,000 tons per month. At this rate, it would take from 36 to 60 months for Zambia to export its entire current surplus. The poor performance of Zambia’s infrastructure is further confirmed by its Logistics Performance Index (LPI) rating. The LPI Index is based on data collected from a global survey of transporters and clearing agents. It measures: (i) the quality of infrastructure; (ii) cost and efficiency; and (iii) ease of procedures. Zambia scored poorly, with a rating of 2.52 out of 5. Among 155 countries, Zambia stood 138th on the overall ranking and performed worse with a rating of 2.41 (and ranking 140th out of 155) on quality of infrastructure.²²

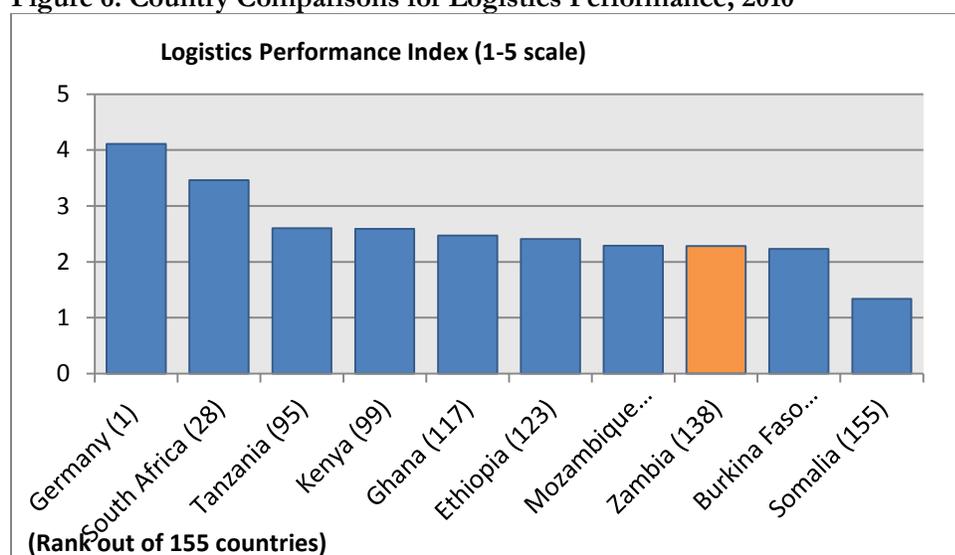
Table 18: Summary of Core Road Network Condition Data for 2011

Road Type	CRN*		Paved						Unpaved						
	km	km	Good %	Fair %	Poor %	km	km	Good %	Fair %	Poor %	km	km	Good %	Fair %	Poor %
Trunk	3,116	3,024	86%	2,601	8%	242	6%	181	92	27%	25	21%	19	52%	48
Main	3,701	2,205	69%	1,521	28%	617	3%	66	1,496	13%	194	45%	673	42%	628
District	13,707	1,362	60%	817	33%	449	7%	95	12,345	16%	1,975	47%	5,802	37%	4,568
Urban	5,597	2,812	38%	1,069	17%	478	45%	1,265	2,785	16%	446	50%	1,393	34%	947
Primary Feeder	14,333								14,333	22%	3,153	44%	6,307	34%	4,873
Total	40,454	9,403		6,008		1,786		1,607	31,051		5,793		14,194		11,064

Source: RDA Road Condition Survey Data.

* Core Road Network. Secondary roads consist of main and district roads. Feeder roads are also referred to as tertiary roads.

Figure 6: Country Comparisons for Logistics Performance, 2010



Source: World Bank 2010.

²² Data based on the 2010 report. There is a latest dataset for 2012, but Zambia was excluded from the international LPI due to an insufficient number of responses.

Currently, in comparison to neighboring countries, Zambia is investing a lot of its resources on trunk roads, many of them over-engineered.²³ It is acknowledged widely, however, that less attention has been given to feeder roads, and the deteriorating quality of roads is a concern. According to the Road Sector Strategy Document, rehabilitating these poor quality roads is expensive,²⁴ and as motorized traffic on most of these roads is still very low (typically less than 20 vehicles per day), there is very little economic justification for rehabilitation (ROADSIP II, 2012). Proponents of rural roads, on the other hand, indicate that if resources are aligned well, there should be adequate budget for maintaining feeder roads.²⁵ Some pilot approaches on output-based performance road contracts have been undertaken as part of the World Bank-supported Agriculture Sector Development Program, whereby private contractors undertake periodic maintenance of feeder roads. Early lessons from these pilots are encouraging in terms of results and reduced cost, and there is some interest to scale them up.

6.3 Private Sector Participation in the Transport Sector

Despite these constraints, there is a large and generally competitive trucking industry in Zambia. At the national level, several large trucking firms, together with individual owner-operators, have the capacity to move goods around the country and serve most rural areas. In all provincial capitals and most district towns, several truck operators are also present and competing for business. At the village level, old minivans and 4x4s ply the feeder roads as bush taxis. Trucking firms say that police interference is not a major problem and point to the fact that many roadblocks have recently been removed, making it easy to move goods around the country. Further, respondents also indicated that there are few barriers to entry; government registration and licensing are not major obstacles to entering the transport business. The process can take time, however. In Zambia, it takes an average of 21 days to register and get an operating license for a truck, while it takes much less in Ghana (5 days) and Tanzania (6 days). Despite the slow process and paperwork involved, transporters do not complain much and are looking forward to an automated system that is currently being built to expedite the process. They also express the view that at the national level, the sector is quite competitive.

In relation to the other ABI pilot countries in Africa, the cost of transporting goods along the main routes in Zambia is comparable to Ethiopia (at US\$ 0.11 per ton per kilometer), while it is slightly higher than Tanzania and Ghana (at US\$ 0.10 per ton per kilometer). Among the secondary routes that are also paved, Zambia's transport cost is found to be quite competitive at US\$ 0.13 per ton per kilometer, while Ghana and Mozambique's costs are as high as US\$ 0.35 and US\$ 0.29 per ton per kilometer, respectively.

To lower transport costs and reduce transaction costs, ZNFU has launched an e-transport system with support from European Union (EU). The e-transport system is a web-based interactive information system which allows farmers and transport users to publicise the availability of loads or

²³ Over-engineering of roads is a term used when a lot of resources are used to improve the surface type of roads without considering the anticipated traffic volume.

²⁴ Currently, 4,873 kilometers of primary feeder roads are in poor condition, and the cost of rehabilitating this network comes to an average of US\$ 30,000 per kilometer.

²⁵ Most funding for roads is still coming from the central government. With the decentralization process that has begun in Zambia, local governments will likely play a greater role in managing feeder roads in the future.

cargo to a known destination and at preferred times of delivery to transporters (African Farming 2011). This system is known as “TransZam”, which works as a country-wide transport information clearing house implemented via cell phones and SMS messages. The impact of this innovative experiment is something that is worth monitoring in terms of its usage and impact on transport prices.

Chapter 7: POLICY AND ENABLING ENVIRONMENT FOR AGRIBUSINESS DEVELOPMENT

Economic reforms of the early 1990s led the transition of the agricultural sector in Zambia to a market-based economy. Many parastatals were privatized, and the policy environment in agriculture became relatively free of major distortions. The removal of exchange controls, improvements in input supplies, opening of markets, and improvement in transport services encouraged the expansion of agricultural exports (World Bank 2009). In the early 2000s, the government devised the National Agriculture Policy (2004–2015), which aimed to increase agricultural production by promoting commercialization through public and private sector participation. Little concrete action related to such partnerships can be reported, however. FISP input subsidies and FRA maize marketing policies (see details in Appendix 1) continue to have a distorting impact, although those interviewed for this report expressed few complaints about government intervention or about the government crowding out private business. Nonetheless, Zambia based policy groups, other private agribusiness association representatives and NGO’s are concerned with the unpredictability and crowding out of FISP and FRA activities.

Table 19: Summary Observations on the Policy Environment for Agribusiness in Zambia

Success Factor	Indicators	Results of Indicators	Data Source
Policy Environment and Advocacy Role	Private sector perceptions of agribusiness enabling environment (0-5 scale)	<p><u>Summary of private sector perceptions (overall average results)</u></p> <p>Seed = 4.4 Fertilizer = 4.2 Trucking (ease of entry) = 4.0 Trucking (competitiveness) = 3.6 Overall average = 4.05</p> <p><i>n.b. Business perception indicators not yet defined for agri-finance or mechanization.</i></p>	<p>Summary of private sector perception indicators.</p> <p><i>Limited sample size</i></p>
	Policy consistency: sudden or frequent changes in policy, regulations, and rules that affect business (0–5 scale) ^a	<p><u>Summary of private sector perceptions (overall average results)</u></p> <p>Overall average = 3.0</p>	<p>Summary of private sector perception indicators.</p> <p><i>Limited sample size, results skewed by sector and type of respondent (FISP v. non-FISP participant)</i></p>
	Private sector advocacy group for agribusiness: existence and effectiveness (0–5 scale) ^b	<p><u>Sector-specific associations:</u></p> <p>Seed Traders’ Association (ZASTA) = 3.5 Zambia Fertilizer and Plant Nutrition Association = 3.0 Machinery Dealers Association = 0.0 Banker’s Association of Zambia = 4.0 Trucker’s Association = 3.0</p>	<p>Various interviews.</p>

		<u>Other agriculture associations</u> Zambia National Farmers Union (ZNFU) = 5 Agriculture Consultative Form (ACF) = 3 ^c	
Policy and Trade Measures	Producer share of cash crop export price for one key exportable (cotton)	Cotton 54% (2010/11 season) <i>n.b. In previous year (2009/10), producer share reported to be "a bit less."</i>	Industry interview.
	Government expenditure on agriculture as % total government expenditure	6% (with around 43% of agricultural spending going for input subsidies) <i>n.b. Comprehensive Africa Agriculture Development Program Compact signed Jan. 18, 2011.</i>	FSRP (2011). <i>See Appendix 1 for further details</i>
	Government expenditure on agriculture as % of agricultural GDP	17.1% (2010 Ag GDP US\$ 1.4904 billion; 2010 government expenditure on agriculture approx.. US\$ 255.3 million)	Own calculations from FSRP (2011) and 2010 World Development Indicators.

Source: Summary of indicators presented in the report.

a 0 = highly inconsistent and unpredictable policy environment with multiple shifts in direction; 5 = highly positive view of a consistent environment where change is infrequent or at least preceded by sufficient consultation with the private sector.

b 0 = no such group; 1 = just established (met 1–2 times with key government policy makers); 2 = underway for several years with at least annual meetings with policy makers; 3= at least one policy/regulatory victory; 4= several policy victories; and 5= highly respected entity often consulted by government.

c ACF had played an active role in reforms of FISP subsidy packages in 2009, but has slipped with its active involvement in advocacy work in the past two years or so.

7.1 Policy Consistency and Private Sector Perceptions of Agribusiness Enabling Environment

Although some firms said the policy environment is now unpredictable because of the change in government, these companies were still of the opinion that government has done a commendable job of consulting the private sector even if it could sometimes do a better job of listening and taking private sector concerns on-board. With respect to the seed and fertilizer sectors, the main policy challenge facing government is the question of how to reform FISP and whether it will be done in a way that creates more (or less) space for private sector competition. There is also talk of reforming the FISP to cover crops other than maize, which could go a long way to promoting agricultural diversification.

As for the private sector perception of the policy environment, companies representing the seed sector gave a rating of 4.4 on a 5-point scale. Respondents in the fertilizer sector gave an equally high rating of 4.2. Despite the high rating, they raised issues related to the tender requirements and implementation modalities of FISP, including (i) the specification for composite fertilizer, which prevents domestic blenders from participating; (ii) the requirement to have more than 50 percent of the fertilizer in the country already at time of tender, thereby preventing small firms from participating; (iii) the late announcement of the size and scale of coverage. The other issues of concern for the private sector were high interest rates and strict requirements for gaining access to credit. With respect to mechanization, the private sector voiced concern about the tractors supplied by donors displacing private sector sales.

7.2 Role and Existence of Private Sector Advocacy Group

In terms of private sector advocacy, there is no single apex body for agribusiness. Each of the sectors covered by the ABI indicators except mechanization has its own association to represent members' interests and engage in policy dialogue with the government. Unsurprisingly, each association has different capacities, and a common statement across sectors was that “our association is good but could do more.”

ZNFU, on the other hand, was rated very highly by virtually all people interviewed as a general advocacy group for agriculture. Several people remarked that ZNFU has a lot of clout with government. The organization is over 100 years old and has a long history of lobbying for high producer prices and other policies it considers favorable to the farm sector. A good recent example is the ban on wheat imports to keep domestic prices high for commercial farmers. While the trade ban clearly has a negative impact on consumers, ZNFU has been able to justify its position on the grounds that it helps to promote much-needed investment in irrigation. The Agriculture Consultative Forum (ACF), once regarded as a strong organization that carried out policy research on private sector interests, seems to have slipped in recent years. None of the respondents could point to any recent examples of ACF's work. On the other hand, research institutes such as the Indaba Agricultural Policy Research Institute (IAPRI) which has been in operation since early 2011 was found to be quite active and is recognized as a leading institution that provides policy advice and information based empirical data and research.

7.3 Government Expenditure on Agriculture

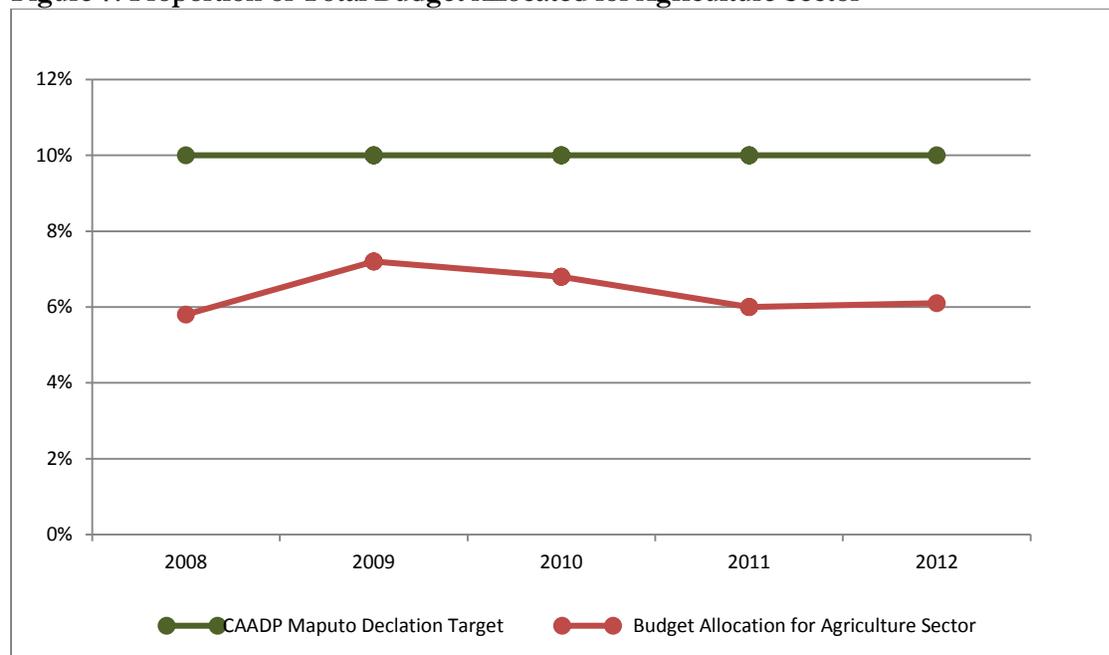
Zambia signed the Comprehensive Africa Agriculture Development Program Compact on January 18, 2011 and has recently been spending just about 6 percent of its total budget on agriculture, which is below the 10 percent target agreed upon under the 2003 Maputo Declaration. Over the years, this proportion of spending on agriculture has been quite constant. In 2008, 5.8 percent of Zambia's budget was allocated to agriculture, which increased to 7.2 percent in 2009 but has been in the range of 6 percent since then (Figure 7). Of this spending, however, nearly half has gone for FSP/FISP input subsidies and FRA maize purchases.

Table 20: Annual Budget Allocations to Different Sectors (real ZMK billions, 2008 prices)

	2008	2009	2010	2011	2012
General Public Services	4,514.2	4,290.7	4,371.4	4,379.8	5,805.4
Defense	981.3	941.8	1,079.6	1,111.3	1,152.4
Public Order and Safety	581.8	538.6	628.2	687.4	711.2
Economic Affairs	2,300.8	2,664.3	2,619.9	3,928.4	5,676.2
Agriculture, Forestry, and Fishing	800.5	966.8	927.4	921.2	1,187.0
Fuel and Energy	48.3	105.9	219.4	266.1	957.5
Transport	1,181.4	1,329.6	1,239.5	2,477.3	3,256.7
Tourism	65.6	68.4	98.4	47.1	36.8
Environmental Protection	95.7	103.4	120.9	90.7	22.2
Housing and Community Amenities	830.6	517.9	536.6	483.6	246.7
Water and Sanitation	399.4	189.1	353.1	415.1	105.1
Recreation, Culture, and Religion	174.1	161.6	79.4	80.8	95.7
Education	2,118.5	2,317.6	2,703.9	2,863.8	3,390.7
Health	1,586.6	1,608.0	1,109.3	1,326.1	1,803.5
Social Protection	577.7	330.0	362.3	409.5	458.3
	13,761.3	13,473.9	13,611.6	15,361.4	19,362.2

Source: World Bank, 2012 based on data from MFNP and Budget.

Figure 7: Proportion of Total Budget Allocated for Agriculture Sector



Source: World Bank, 2012, based on data from MFNP and Budget.

In 2010, total spending on agriculture was around US\$ 255.3 million equal to 17.1 percent of agricultural GDP (equal to US\$ 1.49 billion). Table 21 provides a picture of discretionary spending on agriculture over 2000–08.

Table 21: Functional Classification of Discretionary Expenditure, Zambia, 2000–2008 (constant 2008 values)

Function	Annual Average Value (ZMK million)	Percent of Total Annual Avg. Value	Average Annual Growth (%)
Support to farmers (FSP)	201,239	38.1	16.0
Maize price and income support (FRA)	106,765	20.2	12.7
Support to extension	88,071	16.7	8.9
Agric administration	40,309	7.6	-3.1
Crops research	26,170	5.0	1.4
Forestry	21,518	4.1	2.6
Livestock research and development	17,387	3.3	5.3
Agric investments	8,608	1.6	0.3
Agrarian reform	6,571	1.2	6.3
Fisheries	5,687	1.1	6.3
Agric information	5,259	1.0	4.8
Total Agriculture Sector	527,584	100	5.6

Source: World Bank 2010.

Appendix 1: FISP and FRA Subsidies²⁶

The Fertilizer Support Program (FSP)—as FISP was originally known—was launched in the 2002/03 agricultural season to provide subsidized seed and fertilizer for smallholder maize production. At the time, Zambia’s Ministry of Agriculture estimated that only 30 percent of smallholder households had access to improved maize seed and just 20 percent of farmers had access to fertilizer. After nearly a decade of liberal market reforms, the government therefore saw that small-scale farmers were too weak economically to provide adequate demand for private inputs and that this was leading to problems with the erosion of Zambia’s resource base, low farmer productivity, and increased cases of food insecurity and poverty at the household and national levels. Previous input programs since liberalization suffered from poor credit recovery and were unsustainable.²⁷

To improve this record, the FSP sought to disengage government from credit provision by selling inputs on a direct cost-sharing basis. In addition to the benefits to farmers, it was anticipated the program would create additional demand for inputs and open new market opportunities for private dealers to supply the rural areas. The subsidy program was therefore conceptualized as an initiative that would build both smallholder farmer and private sector capacities as part of a well-managed transition to full market liberalization. Originally, the subsidy level was set at 50 percent but was later increased to 60 percent from the 2006/07 season and then increased to 75 percent from 2009/10. Until at least 2009/10, the subsidy program accounted for more than one-third of the annual public budget allocated to agriculture.²⁸

At the beginning of the 2009/10 agricultural season, FSP was reformed and re-named the Farmer Input Support Program (FISP). Under FISP, beneficiary farmers received less seed and fertilizer (10 kilograms of hybrid seed and two 50-kilogram bags each of Compound D basal fertilizer and urea top dressing against 20 kilograms of seed and eight bags of fertilizer (that is, four bags of each type) under the original FSP), thereby allowing the program to target more beneficiary farmers for a given quantity of inputs. Additionally, local organizations were given a greater role in selecting farmers who would not otherwise be able to purchase fertilizer. Better targeting, it was hoped, would not only provide more fertilizer to those who needed it most but would also enable the private sector to sell more commercial fertilizer to farmers who could afford to buy it.

Under the FSP and FISP, procurement of fertilizer has been handled each year through an open tender. Despite these competitive arrangements, all fertilizer contracts have been awarded to the same three companies since the program’s inception: the state-owned manufacturer, Nitrogen Chemicals of Zambia; Omnia Small Scale Limited; and Nyiombo Investments Limited. Program administrators have reported that the main reason for this outcome is that the other fertilizer companies were judged to lack the physical capacity to deliver the required volumes and/or could not mobilize the necessary finance.²⁹

Unsurprisingly, the awarding of fertilizer contracts to the same private companies each year has led to complaints by firms excluded from the program, with some companies saying the tender

²⁶ Written by John Keyser.

²⁷ World Bank (2010).

²⁸ World Bank (2010).

²⁹ World Bank (2010).

specifications were designed specifically to prevent them from winning a contract. One such rule, for example, has been the requirement to supply granular (composite) fertilizer, which is produced only overseas, rather than blended fertilizer, which is manufactured locally from imported ingredients. Suppliers were also required to have 50 percent of the fertilizer tendered for already in the country at the time of making their bid, which is impractical for small firms or indeed for any company that is not very certain of winning the government contract. In recent years, FSP/FISP has accounted for more than 95 percent of the fertilizer supplied to smallholder farmers.

Both rules on fertilizer procurement have been dropped from the current 2012/13 tender. Most fertilizer companies interviewed for this study therefore expressed a renewed interest in the program. There are also strong indications that the 2012/13 program will include a new voucher mechanism to be piloted in 10 districts, giving farmers freedom to choose any type of seed or fertilizer they wish from local private dealers. Firms that were previously excluded from the program had a very positive view of this development and said that with a voucher mechanism they could at last begin to compete for smallholder business.

With regard to seed, FSP/FISP inputs have always been single-sourced because of the special traits of each type of seed and because farmers ideally are supposed to specify the type of seed they want. Several private firms (MRI Seed, SeedCo, ZAMSEED, Pannar Seed, Prime Agric Centre, Kamano Seed Company, and Croppack Zambia) have therefore participated in the program for many years and expressed less concern about the distorting impact of the government subsidies and tender procedures than the fertilizer companies. Over 50 percent of hybrid maize seed now sold in Zambia is purchased through FISP, with the total value of seed supplied under the program accounting for about 15 percent of program costs.³⁰

On the output side, Zambia has also provided heavy subsidies to maize farmers in recent years. While maize marketing is not specifically covered by the draft ABIs, it is important to note that FRA has for many years been buying maize at pan-territorial prices at depots all around the country. From 2006 to 2009, FRA accounted for around 20–40 percent of maize purchases, but it has since increased its share dramatically. In 2011, for example, Zambia's total maize production is estimated to be around 2.8 million tons, of which 2.0 million tons were marketed and 1.5 million tons (75 percent) bought by FRA. While many farmers still have not been paid for last year's sales, FRA has been offering prices of around US\$ 260 per ton against a selling price to domestic mills and exporters of only US\$ 130–160 per ton. Many respondents remarked that the very large share of purchases by FRA in 2011 can be attributed to the national elections held last year and said that it remains to be seen what differences the new government will bring to FRA's maize marketing. In fact, it is clear that much of the maize bought by FRA will go to waste, because volumes are far more than total domestic demand and physical export capacity combined.

³⁰ World Bank (2010).

Appendix 2: Supplementary Data Tables

The tables provided in this appendix either relate directly to the ABI indicators and/or provide further relevant information on current conditions for agribusiness in Zambia.

SEED

Zambia's Seed Exports, 2011

No.	No. of Orange International Seed Lot Certificates (OICs)	Crop	Destination	No. of OICs	Qty. (kg)
1	596	Maize	Botswana	16	486,255
			Kenya	304	9,052,021
			Malawi	4	160,000
			Rwanda	1	40,000
			Swaziland	30	503,250
			Tanzania	166	4,928,350
			South Africa	15	209,420
			Zimbabwe	60	2,237,600
Subtotals					17,616,896
2	79	Tobacco	Mozambique	38	456
			Malawi	1	12
			Tanzania	14	168
			South Africa	26	312
Subtotals					948
3	11	Sorghum	Kenya	7	200,000
			Malawi	2	700
			Tanzania	2	37,950
Subtotals					238,650
4	7	Soybeans	Tanzania	7	34,775
Subtotals					34,775
Total				693	17,891,269

Source: SCCI 2011.

Number of Crop Varieties Released in Zambia During the Last Five Years

Crops	2007	2008	2009	2010	2011	Total	Average
Maize	17	18	6	8	9	58	11.6
Sorghum	1					1	0.2
Pearl millet	1					1	0.2
Finger millet			2			2	0.4
Wheat	4	1	4		4	13	2.6
Rice			4			4	0.8
Barley			2			2	0.4
Beans	5	2	2	1	2	12	2.4
Cowpeas					1	1	0.2
Soybeans	3	2	2	1		8	1.6
Gnuts		2				2	0.4
Sunflower				1		1	0.2
Guar		1				1	0.2
Cotton				1		1	0.2
Potato		3	2		7	12	2.4
Tobacco		6		6		12	2.4
Peas			2			2	0.4
Total	31	35	26	18	23	133	26.6

Source: SCCI 2011:3.

FERTILIZER

Fertilizer application rates are not provided by MAL/EWU but are straightforward to calculate from the available data. The MAL/EWU provides data for total area planted and total area harvested. The calculations here are based on total area planted as the best indicator of the total area to be fertilized. In aggregate, for all crops, fertilizer application rates work out as follows.

Aggregated Fertilizer Application Rates for Small-Scale and Large-Scale Farmers (2009–10 and 2010–11)

	Total ha planted	Total Fertilizer (tons)			Tons per Ha		
		Basal	Top	Total	Basal	Top	Total
Large-scale							
2009-10	141,533	39,544	30,170	69,714	0.28	0.21	0.49
2010-11	156,037	49,083	38,280	87,363	0.31	0.25	0.56
Small-scale							
2009-10	2,333,592	82,285	84,373	166,658	0.04	0.04	0.07
2010-11	2,358,674	105,413	107,638	213,051	0.04	0.05	0.09
Total							
2009-10	2,475,125	121,829	114,543	236,372	0.05	0.05	0.10
2010-11	2,514,711	154,496	145,918	300,414	0.06	0.06	0.12

Source: Calculated from MAL/EWU data.

The next two tables provide further details of fertilizer application by crop (data ranked from most intensive to least intensive application rate). In these tables, cells shaded in yellow appear to be in error.

Detailed Fertilizer Application Rates by Crop and Farm Sector, 2009–10

	2009-2010 (kg fertilizer per ha)								
	Large Scale			Small Scale			Total		
	Basal	Top	Total	Basal	Top	Total	Basal	Top	Total
Irish potato	1,280.4	459.3	1,739.7	46.0	23.4	69.4	696.1	252.9	949.0
Maize for seed	312.0	290.8	602.9	-	-	-	312.0	290.8	660.2
Wheat	334.6	322.3	656.8	-	-	-	334.6	322.3	656.8
Barley	297.7	320.2	618.0	-	-	-	297.7	320.2	618.0
Tobacco	522.5	164.2	686.7	215.1	155.3	370.4	309.3	158.0	467.3
Maize for silage	212.0	140.1	352.1	-	-	-	212.0	140.1	352.1
Maize for grain	272.6	257.1	529.7	66.1	68.8	134.9	76.0	77.9	153.9
Soybeans	196.9	53.6	250.5	1.9	0.7	2.6	106.6	29.1	135.7
Popcorn	-	-	-	59.2	71.2	130.4	59.2	71.2	130.4
Paprika	70.6	60.1	130.7	53.3	19.9	73.2	60.2	36.0	96.2
Sorghum	332.0	333.5	665.5	1.0	-	1.0	7.8	6.9	14.7
Cowpeas	24.3	3.8	28.1	7.5	3.7	11.2	7.7	3.7	11.5
Cotton	1,257.6	874.3	2,131.9	0.6	0.4	0.9	5.7	4.0	9.7
Mixed beans	124.0	92.0	216.0	2.3	1.4	3.7	4.4	2.9	7.3
Sunflower	111.1	94.3	205.4	0.9	0.9	1.8	2.5	2.2	4.7
Rice	-	-	-	2.7	-	2.7	2.7	-	2.7
Sweet potato	-	0.3	0.3	0.6	0.4	1.0	0.6	0.4	1.0
Groundnuts	-	-	-	0.4	0.3	0.7	0.4	0.3	0.7
Millet	17.2	-	17.2	0.1	0.1	0.2	0.1	0.1	0.2
Cassava	-	-	-	-	-	-	-	-	-

Source: Calculated from MAL/EWU data.

Note: Cells marked in yellow appear to be in error.

Detailed Fertilizer Application Rates by Crop and Farm Sector, 20010–11

	2010-2011 (kg fertilizer per ha)								
	Large Scale			Small Scale			Total		
	Basal	Top	Total	Basal	Top	Total	Basal	Top	Total
Irish potato	1,115.8	564.5	1,680.4	66.5	26.0	92.5	570.6	284.7	855.2
Barley	414.9	308.5	723.4	-	-	-	414.9	308.5	723.4
Wheat	341.5	338.5	680.0	-	-	-	341.5	338.5	680.0
Maize for seed	335.5	324.7	660.2	-	-	-	335.5	324.7	660.2
Paprika	527.9	264.3	792.2	50.6	50.6	101.3	400.1	207.1	607.2
Maize for silage	234.2	172.7	406.9	-	-	-	234.2	172.7	406.9
Tobacco	467.8	147.2	615.0	173.6	128.0	301.6	263.0	133.8	396.8
Maize for grain	280.7	274.6	555.4	77.3	79.8	157.0	83.9	86.1	170.0
Soybeans	198.6	40.5	239.0	3.5	1.0	4.5	134.9	27.6	162.4
Popcorn	38.0	-	38.0	-	34.0	34.0	38.0	34.0	72.0
Cowpeas	51.5	0.9	52.4	2.2	9.8	12.0	5.7	9.2	14.9
Sunflower	157.6	53.2	210.8	1.9	1.7	3.6	6.6	3.3	9.9
Sorghum	150.9	101.6	252.5	0.1	0.1	0.2	5.7	3.8	9.5
Mixed beans	114.2	31.9	146.1	1.5	0.8	2.4	4.1	1.6	5.6
Cotton	108.6	95.6	204.2	2.6	1.8	4.4	3.0	2.2	5.2
Rice	-	-	-	2.1	2.5	4.7	2.1	2.5	4.7
Millet	175.2	131.4	306.5	0.9	0.8	1.6	1.1	1.0	2.1
Sweet potato	39.2	9.2	48.5	0.9	0.7	1.6	1.1	0.8	1.9
Groundnuts	0.4	-	0.4	0.5	0.4	0.8	0.5	0.4	0.8
Cassava	-	-	-	-	-	-	-	-	-

Source: Calculated from MAL/EWU data.

Source: Calculated from, Ministry of Agriculture and Livestock, Early Warning Unit (MAL/EWU).

Note: Cells marked in yellow appear to be in error.

To give an idea of how prices vary by region, data from a survey carried out in 2009 are given below (World Bank, 2010).

		Seed (20kg)	Basal fertilizer (50kg)	Top dressing (50kg)
Central	Kabwe	110,222	125,000	117,500
	Mkushi	112,722	130,000	135,000
	Mumbwa	163,000	120,000	115,000
	Serenje	203,333	148,333	128,333
Copperbelt	Chililabombwe	135,222	147,500	150,000
	Masaiti	195,000	160,000	145,000
	Mufurila	155,000	137,500	140,000
	Ndola	153,333	148,333	143,333
Eastern	Chadiza	98,222	111,000	116,000
	Lundazi	107,722	150,000	150,000
	Nyimba	75,444	105,000	100,000
	Petauke	150,000	152,500	146,000
Northern	Kasama	65,389	125,000	122,500
	Luwingu	n/a	n/a	n/a
	Mporokoso	240,000	165,000	150,000
	Nakonde	80,389	125,000	125,000
Western	Kalabo	130,000	300,000	300,000
	Mongu	138,200	150,000	150,000
	Senanga	184,000	n/a	140,000
	Sesheke	n/a	n/a	n/a
Average Sample		133,089	142,594	138,485
Central		147,319	130,833	123,958
Copperbelt		159,639	148,333	144,583
Eastern		107,847	129,625	128,000
Northern		128,592	138,333	132,500
Western		150,733	225,000	196,667

Source: World Bank 2010 (1.00 = ZMK 3,850).

The Zambia Agricultural Market Information Centre (AMIC) also produces the following data on a regular basis, including prices of fertilizer and other key commodities.



AMIC PRICES FOR RADIO BROADCAST (ZNBC Radio 2 on Saturday 06:45)

Average prices of selected commodities in selected markets: from 7th to 13th May 2012.
as captured by the Agricultural Market Information System (AMIS)

Ministry of Agriculture and Cooperatives

Agricultural Market Information Centre

Retail prices for this week are as follows:

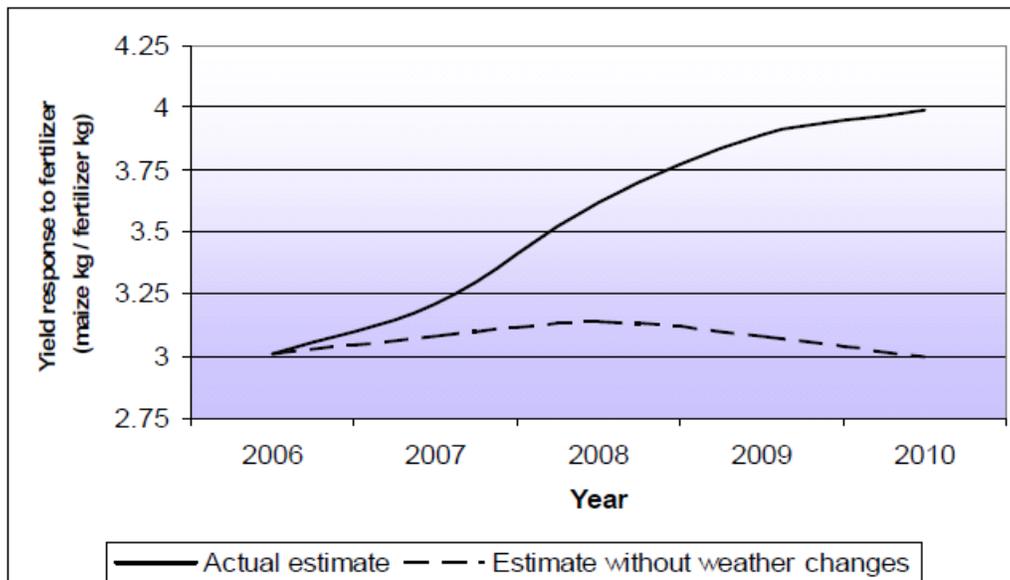
	Maize grain (Meda)	Roller Meal (25kg)	Breakfast Meal (25kg)	White & Yellow beans (Meda)	Groundnuts (Meda)	D Compound fertiliser (50kg)	Urea fertiliser (50kg)
Kabwe	4,500	27,500	41,500	30,000	29,000	200,000	203,000
Ndola	4,500	27,500	38,500	27,500	40,000	210,000	188,000
Mansa	4,000	34,000	47,000	19,500	18,000	220,000	180,000
Lusaka	5,500	27,500	39,000	27,500	27,500	202,000	202,000
Kasama	4,500	31,500	45,500	23,000	20,000		
Solwezi	6,000	31,500	44,500	25,000	20,500		
Choma	6,000	34,000	44,500	24,000	20,000	215,000-218,000	215,000-220,000
Chipata	6,500	33,000	41,000	30,000	30,000	185,000-190,000	170,000-185,000
Mongu	6,500	30,000	49,000	43,000	24,500	230,000	230,000

Wholesale prices for this week are as follows:

	Maize grain (Meda)	Roller Meal (25kg)	Breakfast Meal (25kg)	White & Yellow beans (Meda)	Groundnuts (Meda)	D Compound fertiliser (50kg)	Urea fertiliser (50kg)
Kabwe	3,200			25,000	27,000	190,000.00	190,000.00
Ndola	3,000			25,000	30,000		
Mansa							
Lusaka	4,000			25,000	20,000		
Kasama	3,500			19,000	18,000		
Solwezi	5,000				20,000		
Choma							
Chipata	3,750			14,500	12,500		
Mongu							

Weight of Meda for Maize grain, Groundnuts and Beans is equivalent to 4.5kg to 5kg.

Yield Response to Fertilizer over Time



Source: GRZ CSO Crop Forecast Surveys 2001-2010.

Source: Reproduced from FSRP 2011: 29.

Average Maize Yields (MT/ha) at Different Levels of Fertilizer Use with and without FSP Support in Sampled Provinces

		No fert	Less than 1x1	1x1 or more	2x2 or more	3x3 or more	4x4	More than 4x4
Before FSP	Central	0.65	0.73	1.13	1.70	1.69	2.58	3.87
	Copperbelt	1.37	0.74	1.11	1.35	1.99	2.12	2.88
	Eastern	0.48	0.81	1.04	1.86	2.40	2.66	4.48
	Northern	0.99	0.83	1.24	1.97	2.31	3.13	3.65
	Western	0.19	0.46	0.58	0.70	0.75	0.85	1.14
With FSP	Central	0.60	0.70	1.07	1.62	1.61	2.46	3.69
	Copperbelt	1.30	0.70	1.06	1.28	1.89	2.02	2.74
	Eastern	0.46	0.77	0.99	1.77	2.28	2.53	4.27
	Northern	0.94	0.79	1.18	1.87	2.20	2.98	3.47
	Western	0.18	0.43	0.56	0.67	0.72	0.81	1.08

Source: Own estimates from survey data (average yields for each district from FRC at different levels of fertilizer use, DACO and co-op chairperson estimates of yield at each level of fertilizer use), and other crop budget data and analysis including ZNFU 2007 and Keyser 2007.

Note: In most cases, have assumed 5% extra yield without FSP to account for late delivery of inputs. This assumption is supported by survey results and CSO/MACO data reported by Lungu et al. 2008.

Crop Yields among Smallholders in Zambia (MT/ha); 2001 and onwards

Crop	2001/02	2003/04	2005/06	2007/08	2009/10	2011/2012
Maize	1	1.7	1.5	1.3	2.1	2.2
Sorghum	0.7	0.7	0.5	0.5	0.9	0.78
Rice	1.0	1.0	1.3	1.2	1.7	1.44
Millet	0.7	1.0	0.7	1.0	1.1	0.79
Groundnuts	0.4	0.7	0.5	0.6	0.7	0.61

Source: FAOSTAT; Ministry of Agriculture and Livestock (2011/2012 data).

AGRICULTURAL FINANCE

Inventory of Commercial Banks

INVENTORY OF COMMERCIAL BANKS

* Main lender to agriculture (BOZ reports that the indicated banks together account for 93% of total agriculture lending)

Bank Name	Short Name	Postal Address	City/Town	Phone
ACCESS BANK ZAMBIA LIMITED	Access	P.O. BOX 35273, LUSAKA	LUSAKA	+260-211-227941
AFRICAN BANKING CORPORATION ZAMBIA LIMITED	BancABC	P.O. BOX 39501, LUSAKA	LUSAKA	+260-211-257970
BANK OF CHINA (ZAMBIA) LIMITED	BOC	P.O. BOX 34550, LUSAKA	LUSAKA	+260-211-238711
* BARCLAYS BANK ZAMBIA PLC	BBZ	P.O. BOX 31936, LUSAKA	LUSAKA	+260-211-228858/66
CAVMONT CAPITAL BANK LIMITED	Cavmont	P.P. BOX 32222, LUSAKA	LUSAKA	+260-211-224280/6/7
* CITIBANK ZAMBIA LIMITED	Citibank	P.O. BOX 30037, LUSAKA	LUSAKA	+260-211-229025-8
ECOBANK ZAMBIA LIMITED	Ecobank	P.O. BOX 36187, LUSAKA	LUSAKA	+260-211-250202/4
* FINANCE BANK ZAMBIA LIMITED	FBZ	P.O. BOX 36762, LUSAKA	LUSAKA	+260-211-221808
FIRST ALLIANCE BANK ZAMBIA LIMITED	FAB	P.O. BOX 36326, LUSAKA	LUSAKA	+260-211-229303-6
FIRST NATIONAL BANK ZAMBIA LIMITED	FNB	P.O. BOX 36187, LUSAKA	LUSAKA	+260-211-366800
INDO-ZAMBIA BANK LIMITED	Indo-Zambia	P.O. BOX 35411, LUSAKA	LUSAKA	+260-211-224653
INTERMARKET BANKING CORPORATION LIMITED	Intermarket	P.O. BOX 35832, LUSAKA	LUSAKA	+260-211-227227-8
INTERNATIONAL COMMERCIAL BANK ZAMBIA LIMITED	ICB	P.O. Box 32678, LUSAKA	LUSAKA	+260-211-368700
INVESTRUST BANK PLC	Investrust	P.O. BOX 32344, LUSAKA	LUSAKA	+260-211-294682/5
* STANBIC BANK ZAMBIA LIMITED	Stanbic	P.O. BOX 32111, LUSAKA	LUSAKA	+260-211-229285-6
* STANDARD CHARTERED BANK PLC	Stanchart	P.O. BOX 32238, LUSAKA	LUSAKA	+260-211-229242-60
UNITED BANK FOR AFRICA ZAMBIA LIMITED	UBA	P.O. Box 36794, Lusaka	LUSAKA	+260-211-255897
* ZAMBIA NATIONAL COMMERCIAL BANK PLC	Zanaco	P.O. BOX 33611, LUSAKA	LUSAKA	+260-211-228979/82

Source: Bank of Zambia Website (accessed 21 May 2012) and BOZ interview.

Inventory of Other financial Institutions

MICRO FINANCE INSTITUTIONS			
Bayport Financial Services Limited	Plot No. 68, Bayport House, Independence Avenue, P.O. Box 33819, Lusaka	Lusaka	+260-211-212772
Blue Financial Services Zambia Limited	Stand No. 9814, Metropolitan Building, Kafue Road, P.O. Box 30516, Lusaka	Lusaka	+260-211-232082
Blue Cash Xpress Limited	Stand No. 9814, Metropolitan Building, Kafue Road, P.O. Box 37029, Lusaka	Lusaka	+260-211-234306
Izwe Loans Zambia Limited	Plot No. 471, Shop No. 3A, Cairo Road, P.O. Box 35087, Lusaka	Lusaka	+260-211-235273
Elpe Finance Limited	Plot No. 1020, Northend, Cairo Road, P.O. Box 23224, Lusaka	Lusaka	02-230366
Royal Microfinance of Zambia Limited	Second Floor, Chester House, P.O. Box 32188, Lusaka	Lusaka	+260-211-228455
Letshego Financial Services Limited	Plot No. 49, Independence Avenue, P.O. Box 51499, Lusaka	Lusaka	+260-211-257741
Unity Finance Limited	Second Floor, Ambia House, Cairo Road, P.O. Box 35721, Lusaka	Lusaka	+260-211-233084
FINCA Zambia Limited	Plot No. 1215/3, Mukonteka Close, Rhodespark, P.O. Box 50061, Lusaka	Lusaka	+260-211-251828
Bomach Finance Limited	First Floor, Room 125-128, Central Park, P.O. Box 36298, Lusaka	Lusaka	+260-211-222802
Meanwood Finance Corporation Limited	Fourth Floor, Design House, P.O. Box 31334, Lusaka	Lusaka	+260-211-236165/7
CETZAM Financial Services Limited	Fourth Floor, Mukuba Pension House, Private Bag E760, Lusaka	Lusaka	260-211-222991
Prime Circle Microfinance Limited	Plot No. 11388, Kaunda Square Road, Munali, P.O. Box 34959, Lusaka	Lusaka	260-281694
Pulse Financial Services Limited	First Floor, Unity House, Corner of Freedomway/Katunjira Roads, P.O. Box RW 51269, Lusaka	Lusaka	+260-233137/38
Yakabutala Musa Limited	Shop No. 4, Nange Building, Behind Kabwata Clinic, P.O. Box 36634	Lusaka	+260-977494340
Genesis Finance Limited	Plot No. 20849, First Floor, Corporate Park, Alick Nkhata Road, Lusaka	Lusaka	+260-250372/45
Micro Bankers Trust	Plot No. 57, Zambezi Road, Roma	Lusaka	+260-211-290852
Microcredit Foundation Limited	Plot No. 4404, Off Umodzi Highway, Blue Gum Area, Chipata. P.O. Box 510637, Chipata	Chipata	+260-216-223833
Metropolitan Finance Corporation Limited	Plot No. 35965, E Mutuzi Corporate Park, PHI, P.O. Box 30958, Lusaka, ZAMBIA	Lusaka	+260-211-281943
Wide and Deep Services Limited	Plot No. 6248, Jacaranda Road, P.O. Box 32081, Lusaka	Lusaka	+260-211-252185
Kungoma Financial Services Limited	Room 145, First Floor, Wing L, Permanent House, P.O. Box RW 260	Lusaka	+260-211-235195
Madison Finance Company Limited	Fourth Floor, MLife Building, Dar-es-Salaam Place, P.O. Box 34366, Lusaka.	Lusaka	+260-211-231985
Agora Microfinance Zambia Limited	Plot No. 3807, Kwacha Road, Olympia, P.O. Box 745, Post Net, Manda Hill	Lusaka	+260-211-293593
Sigma Financial Solutions Limited	P.O. Box 35062	Lusaka	+260-211-293341
Kwacha Finsupport Limited	P.O. Box 50481	Lusaka	+260-977-373024
Christian Empowerment Microfinance Zambia Limited	P.O. Box 910227	Mongu	+260-977-880280
Chibuyu Financing Company Limited	P.O. Box 38724	Lusaka	+260-977-414610
VisionFund Zambia Limited	P.O. Box 33911	Lusaka	+260-211-225146
Graypages Financial Solutions Limited	P.O. Box 22713	Kitwe	+260-212-228247
Nu-Bridge Financial Services Limited	P.O. Box 35409	Lusaka	
Faroncredit Limited	P.O. Box 80836	Kabwe	+260-215-222039

LEASING COMPANIES			
ALS Capital Limited	Plot No. 8472, Nexus Centre, Malambo Road, P.O. BOX 31986, Lusaka	Lusaka	+260-211-222807
Commercial Leasing (Z) Limited	Fourth Floor, Premium House, P.O. Box 38293, Lusaka	Lusaka	+260-211-229427
Leasing Finance Company Limited	Plot No. 226, Finsbury House, P.O. Box 72543, Ndola	Ndola	02-618844
Stechas Financial Services (Z) Limited	Nkwazi House, Corner of Nkwazi & ChaChaCha Roads, P.O. Box 33604, Lusaka	Lusaka	+260-211-224107
IMS Financial Services Limited	Plot No 7218/19, Kachidza Road, Light Industrial Area, P.O. Box 35722, Lusaka	Lusaka	+260-211-286562
Alios Finance Zambia Limited	Plot No. 4624, Mwaimwena Road, Rhodespark, P.O. Box 422X, Ridgeway, Lusaka	Lusaka	
Afgri Leasing Services Limited	Plot No. 2744/5, Malambo Road, Industrial Area, Lusaka.	Lusaka	+260-211-240331/2
Focus Financial Services Limited	Second Floor, Mukuba Pension House, P.O. Box 33872, Lusaka.	Lusaka	+260-211-236545

BUILDING SOCIETIES			
Finance Building Society	Head Office, Finsbury Park, Kabwe Round About, P.O. Box 31060, Lusaka	Lusaka	+260-211-236078
Pan African Building Society	Plot No. 8361, Amandra House, P.O. Box 30053, Lusaka	Lusaka	+260-211-220690
Zambia National Building Society	Head Office, Century House, P.O. Box 30420, Lusaka	Lusaka	+260-211-229191

LEASING COMPANIES			
ALS Capital Limited	Plot No. 8472, Nexus Centre, Malambo Road, P.O. BOX 31986, Lusaka	Lusaka	+260-211-222807
Commercial Leasing (Z) Limited	Fourth Floor, Premium House, P.O. Box 38293, Lusaka	Lusaka	+260-211-229427
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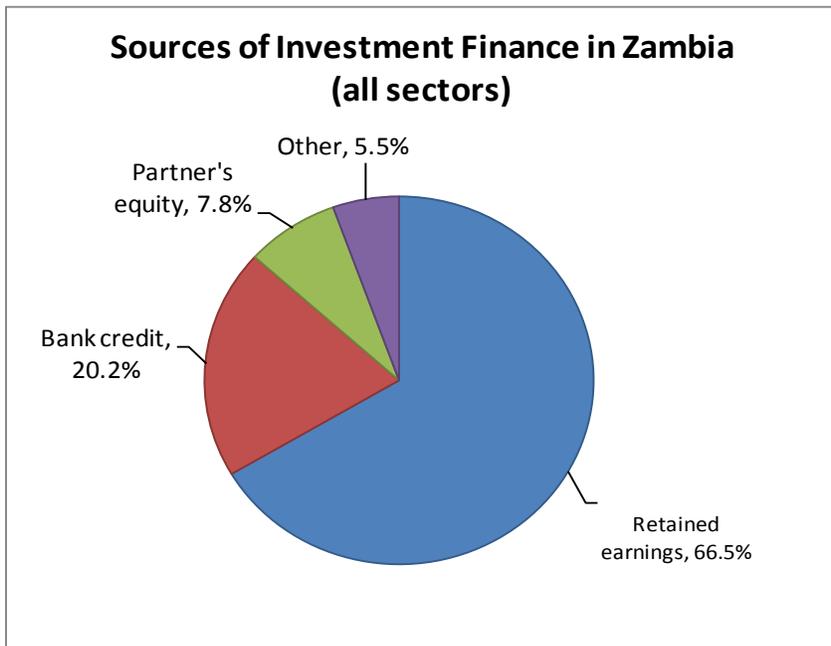
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Zambia National Building Society	Head Office, Century House, P.O. Box 30420, Lusaka	Lusaka	+260-211-229191

Sectoral Distribution of Commercial Bank Loans (part 2 cols 10-18)

DISTRIBUTION OF LOANS AND ADVANCES - NBF1 SECTOR (millions of Kwacha)

	Mar-12	%	Dec-11	%
Agriculture, forestry, fishing and hunting	115,071	8%	125,427	10.1%
Mining and quarrying	124,670	9%	93,193	7%
Manufacturing	45,597	3%	25,333	2%
Electricity, gas, water and energy	6,438	0%	4,016	0%
Construction	27,279	2%	3,333	0%
Wholesale and retail trade	76,376	6%	41,178	3%
Restaurants and hotels	17,545	1%	15,733	1%
Transport, storage and communications	43,209	3%	30,435	2%
Financial services	72,388	5%	74,949	6%
Community, social and personal services	175,290	13%	117,500	9%
Real estate	55,671	4%	76,380	6%
Credit/debit cards	-	0%	-	0%
Other sectors	22,994	2%	33,442	3%
Personal	580,969	43%	604,805	49%
TOTAL	1,363,497	100%	1,245,724	100%

Source: BOZ.



Source: BOZ.

TRANSPORT

Smallholder Market Access Conditions, 2004, 2008, 2010, and 2011

Distance to the nearest --- (in Km)	Survey, year	Weighted sample size	Percentile of farm household distribution						
			Mean	10	25	50	75	90	
			(1)	(2)	(3)	(4)	(5)	(6)	
----- Kilometer distance -----									
Distance to nearest district town	SS 2004	(A)	1,253,977	34.9	9.5	16.0	29.9	47.9	71.0
	SS 2008	(B)	1,652,641	34.1	9.8	15.4	28.7	46.0	69.2
	CFS 2010	(C)	1,476,610	37.1	6.0	13.0	30.0	58.0	80.0
	CFS 2011	(D)	1,253,977	-	-	-	-	-	-
Motorized/vehicular transport	SS 2004	(E)	1,253,977	7.8	.0	.7	3.0	9.0	21.0
	SS 2008	(F)	1,652,641	7.2	.0	.3	2.0	8.0	20.0
	CFS 2010	(G)	1,476,610	8.2	.0	.8	3.0	8.0	21.0
	CFS 2011	(H)	-	-	-	-	-	-	-
Km from farm to location of largest maize sale transaction to private assembly traders	SS 2004	(I)	242,107	5.74	.0	.0	.0	4.0	19.0
	SS 2008	(J)	213,506	10.72	.0	.0	.0	4.0	25.0
	CFS 2010	(K)	244,005	8.99	.0	.0	.0	2.0	24.0
	CFS 2011	(L)	191,138	6.88	.0	.0	.0	3.0	20.0
Km distance to maize wholesale market	SS 2004	(M)	-	-	-	-	-	-	-
	SS 2008	(N)	-	-	-	-	-	-	-
	CFS 2010	(O)	1,476,610	14.4	.4	2.0	7.0	18.0	39.0
	CFS 2011	(P)	-	-	-	-	-	-	-
Fertilizer private seller	SS 2004	(Q)	169,519	16.2	.0	2.0	9.0	20.0	40.0
	SS 2008	(R)	267,607	25.3	2.0	6.0	15.0	35.0	65.0
	CFS 2010	(S)	318,913	27.7	1.0	4.0	15.0	38.0	65.0
	CFS 2011	(T)	324,781	28.0	1.0	4.0	14.0	40.0	65.0
Government fertilizer channel	SS 2004	(U)	146,555	7.8	.0	1.0	2.0	6.0	19.0
	SS 2008	(V)	146,315	9.2	.2	1.0	3.0	8.0	20.0
	CFS 2010	(W)	299,459	8.0	.0	1.0	3.0	6.0	16.0
	CFS 2011	(X)	439,148	8.3	.0	1.0	2.0	5.0	13.0
Food Reserve Agency Depot	SS 2004	(Y)	13,688	16.2	.0	.5	7.0	30.0	45.0
	SS 2008	(Z)	146,024	8.	1.0	2.0	4.2	12.0	19.0
Maize non-sellers	CFS 2010	(AA)	1,084,860	16.6	1.5	4.0	10.0	21.0	41.0
Maize sellers	CFS 2010	(AB)	116,122	12.6	1.0	3.5	8.0	16.0	30.0
	CFS 2011	(AC)	287,107	8.03	.0	1.5	4.0	8.0	20.0

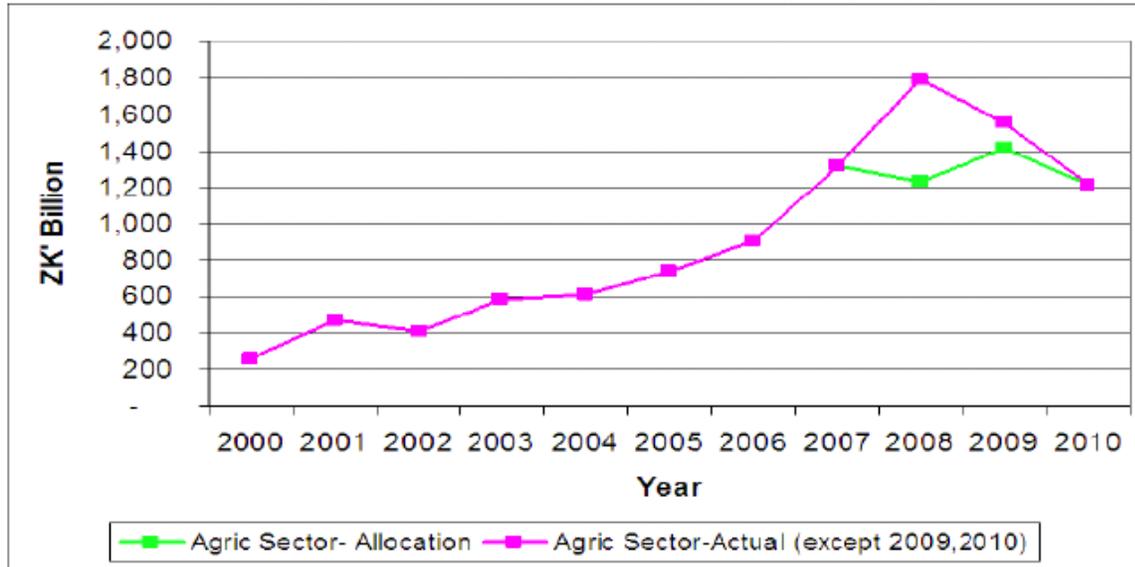
Source: CSO/FSRP Supplemental Surveys, 2004 and 2008; MACO/CSO Crop Forecast Surveys 2010 and 2011.

Source: Chapoto and Jayne 2011.

AGRICULTURE BUDGET

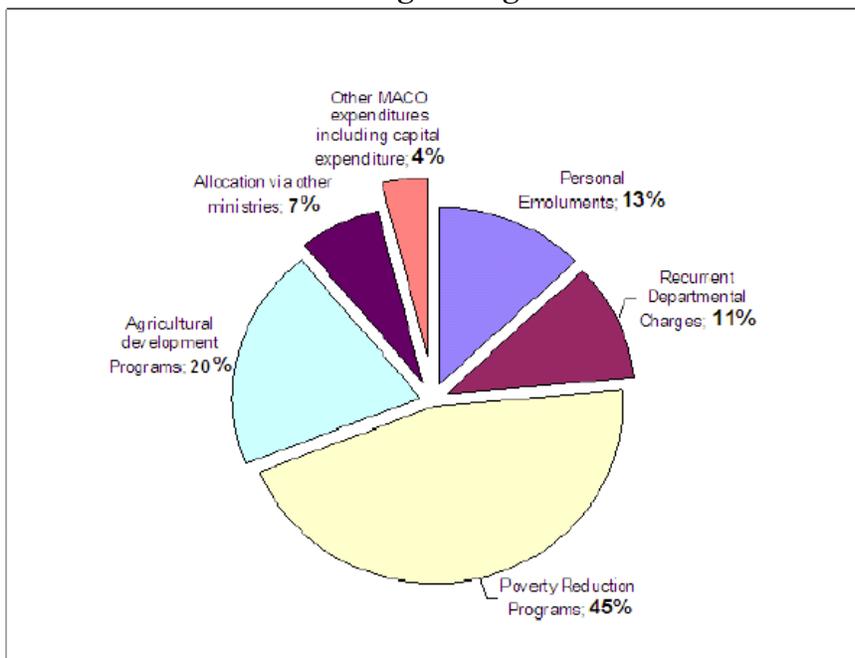
In the tables below, the difference between the pink and green lines is driven by changes in FSIP/FRA spending where actual spending was higher than the allocated amounts in 2008 and 2009.

Public Spending on Agriculture, 2000–2009 (nominal terms)



Source: FRSP (2011:42), cited as Ministry of Agriculture and Cooperatives.

2010 Allocation of Public Budget to Agriculture



Source: FRSP (2011:43), cited as Ministry of Agriculture and Cooperatives.
 Note: Poverty Reduction Programs, mostly FISP.

TARIFFS ON AGRICULTURAL INPUTS

All information from the Zambia Revenue Authority (ZRA) online tariff guide:
<http://www.zra.org.zm/tariffGuide.php>

Seed

Most seed 5 percent duty; VAT exempt; unlike others, wheat seed subject to standard 16 percent VAT.
 Cotton seed attracts 15 percent export duty.

HS Code	Description	Customs Duty Rate	VAT Rate
10.05.10	Maize seed (hybrid)	5%	E
10.06	Rice (all types)	15%	E
10.01	Wheat seed	5%	S
12.01	Soybeans, whole or broken	15%	E
12.07.20	Cotton seed	15%	E

Note: VAT Rates: S = Standard (16%); E = Exempt; 0% = Zero rated.

Fertilizer

Some micronutrients used for local blending of fertilizer (also used by the mining industry) do attract customs duty and VAT.

HS Code	Description	Customs Duty Rate	VAT Rate
31.02	Mineral or chemical fertilizers, nitrogenous (urea)	Free	E
31.03	Mineral or chemical fertilizers, phosphatic	Free	E
31.04	Mineral or chemical fertilizers, potassic	Free	E
31.05	Mineral or chemical fertilizers containing two or three of the fertilizing elements (NPK)	Free	E

Note: VAT Rates: S = Standard (16%); E = Exempt; 0% = Zero rated.

Agri-chemicals

Insecticides previously 15 percent duty, zero rated (until at least 2008).

HS Code	Description	Customs Duty Rate	VAT Rate	Remarks
3808.91.10	Insecticides for use in agriculture or horticulture	Free	0%	Other insecticides 15%, S
3808.92.10	Fungicides for use in agriculture or horticulture	Free	0%	Other fungicides 15%, S
3808.93	Herbicides, anti-sprouting products and plant growth regulators	Free	E	

Note: VAT Rates: S = Standard (16%); E = Exempt; 0% = Zero rated.

Tractors and Other Farm Equipment

HS Code	Description	Customs Duty Rate	VAT Rate	Remarks
87.01.10	Pedestrian controlled tractors	Free	0%	
87.08	Parts and accessories of motor vehicles under heading 87.01 to 87.05	15%	S	i.e., tractor spare parts
84.24.81	Agricultural and horticultural sprayers	15%	S	Includes knapsack sprayer

Note: VAT Rates: S = Standard (16%); E = Exempt; 0% = Zero rated.

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