THE AFRICAN SEED ACCESS INDEX (TASAI) COUNTRY REPORT– DEMOCRATIC REPUBLIC OF THE CONGO

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About TASAI

The African Seed Access Index is a collaborative initiative between Emerging Markets program at Cornell University and Market Matters Incorporated (MM Inc.). Through this partnership, TASAI brings together research expertise from Cornell University with hands-on African agribusiness sector development work from Market Matters Inc. In-country partners include local agricultural universities, consultants, seed traders' associations, relevant government departments, as well as non-governmental organizations working in seed sector development.

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Disclaimer

The opinions expressed herein are those of the authors and do not necessarily reflect the views of the ELAN RDC, UKAID, Market Matters Inc., reviewers or any other parties.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF ACRONYMS

AGRA	Alliance for a Green Revolution in Africa
AGRIPEL	Agriculture, Fishery and Livestock
BTC	Belgian Technical Cooperation
CIAT	International Agricultural Tropical Center
COMESA	Common Market for Eastern and Southern Africa
COPROSEM	Provincial seed councils
CTAC	Technical Commission for Admission to the Catalogue
DPPV	Department of Production and plant protection
DRC	Democratic Republic of Congo
FAO	Food and Agriculture Organization of the United Nations
HHI	Herfindahl-Hershman Index
IITA	International Institute of Tropical Agriculture
INERA	National Institute of Study and Agricultural Research
IPAPEL	Provincial Inspection of Agriculture, Fishery and Livestock
KALRO	Kenya Agriculture and Livestock Research Organization
NARO	National Agricultural Research Organization
NGO	Non -Governmental Organization
PANA-AFE	Project on the resilience and adaptability of women and children to climate change
PASA	Partners for Seed in Africa
PNR	National rice program
RAB	Rwanda Agricultural Board
RSA	Republic of South Africa
SENASEM	National Seed Service
SNV	National Extension Service
SQAV	Animal and Plant Quarantine Services
TASAI	The African Seed Access Index
UNILU	University of Lubumbashi

PART 1:
NATIONAL REPORT

1 BACKGROUND

1.1 INTRODUCTION

The vast majority of the population (about 56%) in the Democratic Republic of Congo (DRC) lives in the rural areas and depends on agriculture as a livelihood (FAOSTAT, 2017). The DRC has significant potential for agricultural development as the country has more land (235 million hectares) than Kenya, Malawi, Tanzania, and Zambia, combined. Of this amount, about 80 million hectares (30% of the total country land mass) is suitable for farming, of which only about 10% is currently farmed. Good quality seeds of improved crop varieties are a foundation for increased crop yields/production. While some commercial farmers import certified seeds from neighboring countries, the vast majority of small-scale famers continue to use seeds saved from the previous harvest, by themselves or their neighbours, or buy grain from the market and use it as seed. At present, approximately 5% of DRC's seed requirement is met by formal seed sector, while 95% is supplied by informal channels. The DRC's seed industry is under-developed, and the government is engaged in efforts to improve the quality of seed available for farmers.

1.2 OBJECTIVES AND SCOPE OF THE STUDY

The African Seed Access Index (TASAI) study was commissioned by Market Matters Inc in 2017. The main objective of the study was to evaluate the enabling environment for the seed industry in Democratic Republic of Congo (DRC) in 2017, using the TASAI framework that measures performance on 20 key indicators. Specifically, the study evaluates four main staple food crops—maize, rice, beans, and soya beans—and analyses the following aspects of DRC's seed sector: Research and Development, Industry Competitiveness, Seed Policy and Regulations, Institutional Support and Service to Smallholder Farmers.

2 METHODS

2.1 DATA TYPES AND SOURCES

Regions: The survey was carried out in four regions of the country (see Table 1 and Figure 1). These regions were selected for three main reasons: (i) the four focus crops are produced in these regions, (ii) most seed sector-related activities take place in these areas, and (ii) there are notable developments in the seed sectors in these regions, mainly supported by external partners.

Table 1: Regions covered in TASAI research

Region	Provinces
Eastern Region	North Kivu, South Kivu
Western Region	Kinshasa, Congo-Central, Kwilu, Kwango
Southern Region	Haut-Katanga, Lualaba
Northern Region	Mongala, Equateur, Nord Ubangi, Sud Ubangi

Figure 1. Regions and provinces included in the TASAI study.

Respondents: The following categories of respondents were interviewed:

- Seed producers: local seed companies, foreign-owned seed companies, individual farmers, farmers' association, agro-dealers, and commercial farmers (latter two importing certified seeds).
- Breeders from public (INERA and university) or private (NASECO and Harvest+) institutions
- Relief organizations importing and distributing seeds: several NGOs and UN agencies interviewed import certified seeds.
- Ministry of Agriculture Departments/Agencies: staff from IPAPEL, AGRIPEL, SENASEM, SQAV and DPPV.

Both qualitative and quantitative methods were employed to collect data, mostly from primary sources, and to a lesser extent from secondary sources. Primary data was gathered through a seed producer questionnaire (see Annex 1) that was used to interview senior staff from local private seed companies, foreign seed companies, individual farmers, seed producer associations, agro-dealers (importing or procuring seed from local seed companies), and commercial farmers (importing or procuring seed from foreign seed companies). Additional data was gathered through interviews with key informants,

specifically breeders (INERA, University of Lubumbashi, CGIAR institutions, seed companies), staff from the ministry of agriculture, representatives of organizations engaged in the seed sector including FAO and several NGOs. Data collection took place between 1st July to 11th August 2017.

Table 2 below provides a breakdown of the seed producers by region and by category. Note that local private seed companies in North and South Kivu provinces were recently initiated under the PASA project, funded by AGRA in 2015, and, as such, most own few assets. The one local seed company based in Katanga is currently not operational. Of the 36 seed producers in the Northern Region (i.e., Nord and Sud Ubangi, Equateur and Mongala) only six were producing at least one of the four focus crops in 2016.

Table 2: Categories of seed producers or seed merchants

Region	Province	Town (if necessary)	Seed companies	Seed producers	Seed associations	Agro-dealers	Commercial farmers
East	North Kivu	Goma	3	3	3	1	0
		Rutshuru	3	5	8	2	0
		Beni	0	2	3	2	0
	South Kivu	Bukavu	1	2	4	1	0
		Uvira	0	2	5	0	0
	Sub-total (Eastern Region)		**7**	**14**	**23**	**6**	**0**
South	Haut Katanga	Lubumbashi/ Likasi	3	5	1	4	2
	Lualaba	Kolwezi	0	0	0	1	2
		Fungurume	1	0	0	0	1
	Sub-total (Southern Region)		**4**	**5**	**1**	**5**	**5**
West	Kinshasa	Kinshasa	0	1	1	2	0
	Kwango	Kenge	0	0	0	0	1
	Kongo Central	Boma	0	0	2	0	0
	Kwilu	Kikwit	0	1	8	0	0
	Sub-total (Western Region)		**0**	**2**	**11**	**2**	**1**
North	Equatuer	Mbandaka	0	1	1	0	0
	Sud Ubangi	Gemena	0	3	1	0	0
	Sub-total (Northern Region)		**0**	**4**	**2**	**0**	**0**
TOTAL			**11**	**25**	**37**	**13**	**6**

In total, the DRC has 11 active seed companies that produce at least one of the four focus crops. Of these, four are foreign-owned companies. The breakdown by province and ownership is presented in Table 3.

Table 3: Seed companies in the DRC in 2016

No.	Province	Name of seed company	Category		Interviewed (Y/N)
			Local	Foreign	
1	North Kivu	JOB Seed Company	√		Y
2	North Kivu	Ets. Buhendwa	√		Y
3	North Kivu	NASECO		√	Y
4	North Kivu	Plantation Anany	√		Y
5	North Kivu	Ets Semence Kimana	√		Y
6	North Kivu	Ets Baraka	√		Y
7	South Kivu	Agri Forge	√		Y
8	Haut Katanga	SEEDCO		√	Y
9	Haut Katanga	PANNAR		√	Y
10	Haut Katanga	ZAMSEED		√	N
11	Lualaba	MBEKO SHAMBA	√		Y
TOTAL			**7**	**4**	

2.2 DATA ANALYSIS

The survey data was analyzed using descriptive statistics. In addition, several indicators were analyzed qualitatively. A summary of the TASAI indicators is provided in Table 4 below. Note that the last column denotes the correlation between magnitude of indicator and seed access by farmers.

Table 4: Summary of key indicators and their expected impact on TASAI

CATEGORY	Crop Specific	Impact on Seed Access
A. RESEARCH AND DEVELOPMENT		
1. Number of active breeders	Yes	+
2. Number of varieties released in the last 3 years	Yes	+
3. Availability of foundation seed	Yes	+
4. Average age of varieties sold	Yes	-
5. Percent of varieties sold with climate–smart features	Yes	+

B. INDUSTRY COMPETITIVENESS		
6. Number of active crop seed companies	Yes	+
7. Time it takes to import seed from neighboring countries	No	-
8. Market share of top 4 companies	Yes	-
C. SEED AND POLICY REGULATIONS		
9. Length of variety release process	Yes	-
10. Status of seed policy framework	No	+
11. Quality of regulatory system	No	+
12. Adequacy of seed inspectors	No	+
13. Efforts to stamp out fake seed	No	+
D. INSTITUTIONAL SUPPORT		
14. Availability of extension services for smallholder farmers	No	+
15. Quality of national seed trade association	No	+
E. SERVICE TO SMALLHOLDER FARMERS		
16. Concentration of rural agro-dealer network	No	+
17. Availability of seed in small packages	Yes	+
18. Seed-to-grain price ratio at planting time	Yes	+

Industry opinion

Several of the questions in the report are ratings of level of satisfaction by industry members of a particular aspect of the country's seed industry. These questions complemented the other findings and were scored from 0 to 100, using the colour coding shown in Table 5 below.

Table 5: Colour coding of industry opinion

Score	Interpretation
80 to 100	**Excellent**
60 to 79.99	**Good**
40 to 59.99	**Fair**
20 to 39.99	**Poor**
0 to 19.99	**Extremely poor**

3 PART ONE: NATIONAL REPORT

The report is divided into two parts. Part One focuses on the findings at the national level and compares data gathered in the DRC and other African countries where TASAI studies have been conducted. Part Two presents the findings at the regional level. In interpreting the national level analysis, it is important to keep in mind that while the analysis covers 10 provinces with highest agricultural potential, it leaves out 16 provinces. Because formal seed sector activity is minimal to non-existent in the excluded provinces, one should not take the national averages in this report as representative of the entire country.

4 RESEARCH AND DEVELOPMENT

4.1 NUMBER OF ACTIVE SEED BREEDERS

The DRC has a total of 14 active breeders for the four focus crops—seven for maize, two for bean, three for rice, and two for soya bean (see Table 6). All the breeders are employed in the public sector by the National Institute of Study and Agricultural Research (INERA) and the University of Lubumbashi (UNILU). Four of the foreign-owned private seed companies have in-house breeders; however, all of them are based outside the DRC. None of the locally-owned private seed companies employed breeders in 2016. Some of the public and private breeders work closely with CGIAR centers, primarily CIAT and Harvest Plus.

Seed producers rate their satisfaction with the adequacy of breeders as "good" for all four crops—77% for bean, 70% for maize, 70% for soya bean, and 60% for rice. However, despite the relatively high level of satisfaction, the producers noted that INERA and UNILU lack adequate facilities and financial resources to do their work effectively.

Table 6: Number of active breeders (at Ph.D. and M.Sc. levels)

Crop	Number of breeders				
	Public	Private	Total	Satisfaction (out of 100%)	Interpretation
Maize	7	0	7	70%	Good
Rice	3	0	3	60%	Good
Beans	2	0	2	77%	Good
Soya beans	2	0	2	70%	Good
Total	14	0	14		

While the number of breeders in the DRC is low, other African countries record similar figures (e.g., Uganda, which also has 14 breeders), while quite a few others have many more breeders, for example Zambia (26) or Kenya (63) (see Table 7). However, it is important to view these findings in context: in terms of land mass, the DRC is much larger than any of the other three countries, which makes it more challenging to locate breeders close to seed producers. In addition, these three countries (especially Kenya and Zambia) also have private breeders, whose work complements public breeding efforts.

Table 7: Number of active breeders (selected African countries)

Crop	Number of breeders							
	DRC		Kenya		Uganda		Zambia	
	Crop	Number	Crop	Number	Crop	Number	Crop	Number
Crop 1	Maize	7	Maize	34	Maize	5	Maize	17
Crop 2	Rice	3	Sorghum	7	Sorghum	5	Rice	5
Crop 3	Beans	4	Beans	17	Beans	3	G'nuts	3
Crop 4	S'beans	2	Cowpeas	5	Millet	1	Beans	1
Total		16		63		14		26
Interpretation		Good		Fair		Poor		Good

4.2 NUMBER OF VARIETIES RELEASED IN THE LAST 3 YEARS

In the DRC, the National Seed Service (SENASEM) is the government institution in charge of field inspection, control, and certification of seeds. In addition, SENASEM serves as the secretariat of the Technical Commission of Admission to the Catalogue (CTAC). The National Seed Catalogue was last amended in 2012. According to SENASEM, the main reason why the catalog has not been updated for over five years is the lack of adequate financial resources. Although not officially included in the National Seed Catalog for the above reason, a total of 20 varieties of the four crops were released between 2014 and 2016: 6 maize, 4 rice, and 10 bean varieties. No soya bean varieties were released in the period. The new varieties are written on a temporary list (Appendix 3).

Compared to other countries in the region, the number of varieties released in the DRC between 2014 and 2016 is significantly lower than, for example, Tanzania (50 varieties) or Zambia (44 varieties) over the same period. That said, the figure exceeds the number of varieties released in Malawi, which is 17. While the overall number may be lower than in other countries, the 20 varieties released in the DRC were more diverse than those in Malawi, Tanzania, and Zambia, where 100%, 88%, and 84% of varieties released were maize, respectively (see Table 8). This clearly shows a dominance of maize in breeding programs. In contrast, in the DRC the crop with the highest percentage of new releases was beans, accounting for only half of the 20 new varieties. This diversity is a positive aspect of research and development in the DRC. In addition, the large number of variety releases in surrounding African countries highlights the potential for introducing these varieties into the DRC.

Table 8: Number of varieties released in the last three years (selected African countries)

Crop	Number of varieties released (2014-2016)							
	DRC		Malawi		Tanzania		Zambia	
	Crop	Number	Crop	Number	Crop	Number	Crop	Number
Crop 1	Maize	6	Maize	17	Maize	44	Maize	37
Crop 2	Rice	4	Beans	0	Beans	2	Rice	3
Crop 3	Beans	10	Groundnut	0	Soya bean	0	Groundnut	2
Crop 4	S'beans	0	Soya bean	0	Pidgeon pea	4	Bean	2
Total		20		17		50		44

4.2.1 Number of varieties released in DRC (2000-2014)

Between 2000 and 2012 (the year when the Catalogue was last updated), a total of 63 varieties of maize (10), rice (18), bean (32), and soybean (3) were registered. Most varieties (43) were registered in 2008. (Table 9).

Table 9: Counts and three-year-moving averages of the number of varieties registered up to 2016.

	Maize		Rice		Beans		Soya beans	
Year	Annual Counts	Moving Average	Annual Counts	Moving Average	Annual Counts	Moving Average	Annual Counts	Moving Average
2000	0		2		0		0	
2001	0		1		0		0	
2002	0	0	0	1	0	0	0	0
2003	0	0	0	0.3	0	0	0	0
2004	0	0	0	0	0	0	0	0
2005	0	0	3	1	0	0	0	0
2006	1	0.3	0	1	0	0	0	0
2007	0	0.3	0	1	0	0	0	0
2008	5	2	11	3.7	25	8.3	2	0.7
2009	0	1.7	0	3.7	0	8.3	0	0.7
2010	0	1.7	0	3.7	0	8.3	0	0.7
2011	0	0	0	0	0	0	0	0
2012	4	1.3	1	0.3	7	2.3	1	0.3
2013	0	1.3	0	0.3	0	2.3	0	0.3
2014	0	1.3	0	0.3	0	2.3	0	0.3
2015	0	0	0	0	0	0	0	0
2016	0	0	0	0	0	0	0	0

Source: National Variety Catalogue

4.2.2 Number of varieties sold to farmers

Between 2014 and 2016, a total of 89 varieties of the focus crops were sold to farmers in the four regions studied by TASAI (Table 10). These included 41 maize, 20 rice, 16 bean, and 12 soya bean varieties. (See Appendix 1 for the list of varieties sold to farmers). The overall number is lower than corresponding figures for other African countries in 2016, such as Malawi (91 varieties sold), Zambia (120 varieties sold), and Zimbabwe (95 varieties sold). However, the number of varieties sold varies widely by crop. Not

surprisingly, most of the varieties sold on the market in Malawi, Zambia, and Zimbabwe are maize varieties, and significantly fewer varieties of the other top three crops are available for farmers. The DRC stands in contrast to this, where the number of varieties of the four focus crops sold to farmers are more evenly distributed.

Table 10: Number of varieties sold to farmers between 2014 and 2016 (selected African countries)

Crop	Number of varieties sold to farmers (2014-2016)[1]							
	DRC		Malawi		Zambia		Zimbabwe	
	Crop	Number	Crop	Number	Crop	Number	Crop	Number
Crop 1	Maize	41	Maize	57	Maize	88	Mize	59
Crop 2	Rice	20	Beans	15	Rice	2	Beans	14
Crop 3	Beans	16	Groundnut	6	Groundnut	13	Soybean	1
Crop 4	Soybean	12	Soybean	13	Beans	17	Sorghum	12
Total		89		91		120		95

4.3 AVAILABILITY OF FOUNDATION SEED

In the DRC, most foundation seed is sourced domestically: the relevant figures are 96% for soya beans, 93% for beans, 86% for rice, and 78% for maize. The main sources of foundation seed are INERA and UNILU, who sometimes work closely with other institutions (IITA and Harvest Plus) and projects such as the PASA project and MIMOSA. In addition, one-fifth (20%) of maize producers source foundation seed from agricultural research institutions from neighboring countries, including ISABU in Burundi, the Kenya Agricultural and Livestock Research Organization (KALRO), the Rwanda Agricultural Board (RAB), and National Agricultural Research Organization (NARO) in Uganda. Several companies from Uganda and Kenya also provide foundation seed. Table 11 shows the main sources of foundation seed for the seed producers in the DRC.

Table 11: Main sources of foundation seed

Source		Maize		Rice		Beans		Soya beans	
Organization	Country	(%)	Score	(%)	Score	(%)	Score	(%)	Score
INERA/PASA/HARVEST Plus/MIMOSA	DRC	78	7.0						
ISABU	Burundi	10	6.6						
NASECO/PANNAR/HARVEST Plus	Uganda	10	6.8						
RAB	Rwanda	1	7.0						
SEDCO	Kenya	1	6.0						
INERA/PASA/SNV	DRC			86	6.1				

[1] The numbers for Malawi, Zambia and Zimbabwe are only for varieties sold in 2016

ISABU/Ets Munga	Burundi			9	7.7				
NARI	Tanzania			2.5	6.0				
JICA/AFRICA, PING HITECH, RICE/LONG,	Egypte/Benin /China			2.5	5.0				
INERA/HARVEST Plus /PASA/Bon Berger	DRC					93	6.5		
NASECO	Uganda					7	5.0		
INERA/IITA/PASA/ELAN RDC	DRC							96	6.2
SEEDCO	Rwanda							4	7.0

Seed producers rate their satisfaction with the availability of foundation seed as "good" across the four crops: the ratings are 65% for maize, 61% for rice, 63% for beans, and 62% for soya beans (Table 11). These relatively high ratings are because seed producers have easy access to foundation seed from either of the two main sources - INERA and UNILU.

In more advanced seed sectors, such as Zimbabwe, some companies maintain their own foundation seed. As a result, seed companies in Zimbabwe report even higher ratings: 84% for maize (84%) and 80% for bean (Table 12).

Table 12: Availability of foundation seed

Crop	Availability of foundation seed (out of 100)							
	DRC		Malawi		Tanzania		Zimbabwe	
	Crop	Score	Crop	Score	Crop	Number	Crop	Number
Crop 1	Maize	65	Maize	65	Maize	72	Maize	84
Crop 2	Rice	61	Beans	49	Bean	61	Beans	80
Crop 3	Beans	63	Groundnut	58	Soya bean	65	Soya bean	76
Crop 4	Soya bean	62	Soya bean	52	Pidgeon pea	45	Sorghum	77

4.4 AVERAGE AGE OF VARIETIES SOLD

Table 13 lists the average age of varieties for each focus crop using as the starting date the year when the variety was first introduced (as opposed to when it was included in the catalogue, which may be different). The average age of varieties are as follows: maize—17.6 years, rice—16.5 years, beans—22 years, soya beans—18 years. Across the four crops the varieties in the DRC are older those on the market in the other COMESA countries. The youngest maize varieties were Mudishu 1 (4 years), Mudishu 3 (4 years), and UNILU (8 years). The old varieties for all the crops have significantly depreciated and should be retired and replaced with the newer varieties.

Table 13: Average age of varieties sold

Crop	Average age of varieties sold to farmers (2014-2016)[2]							
	DRC		Malawi		Uganda		Zambia	
	Crop	Age (yrs)	Crop	Age (yrs)	Crop	Age yrs)	Crop	Age (yrs)
Crop 1	Maize	17.6	Maize	5.7	Maize	6.4	Maize	10
Crop 2	Rice	16.5	Beans	11	Sorghum	14.5	Rice	4
Crop 3	Beans	22	Groundnut	18	Beans	9.9	Groundnut	29
Crop 4	Soya bean	18	Soya bean	8	Millet	22.7	Beans	12

4.5 PERCENTAGE OF VARIETIES WITH CLIMATE-SMART FEATURES

Climate-smart features include drought tolerance, early maturity or extra-early maturity. Of the varieties released between 2014 and 2016, 75% of maize varieties, 50% of bean varieties, and 25% of rice varieties had climate-smart features (Table 14), although in the case of rice, this is only one variety as a total of 4 varieties were released. There were no new soya bean varieties released during the period. All the climate-smart maize varieties are drought-tolerant, four out of five of the bean varieties are early-maturing, as is the one new rice variety.

The climate-smart maize varieties are ZM625, ZM627, ZM525, and ZM725, while the climate-smart bean varieties are HM21-7 (drought tolerant bush bean), NABE4 (early-maturing bush bean), MBC 23 (early-climbing bean), RWV1129 (early-climbing bean) and COD MLV095 (early-maturing climbing bean).

Table 14: Percentage of varieties with climate-smart features

	Maize	Rice	Beans	Soya beans
Number of varieties released (2014-2016)	5	4	10	0
Number with climate-smart feature	4	1	5	0
Percentage	80	25	50	0
Number with drought-tolerance features	4	0	1	0
Number with early / extra-early maturing	0	1	4	0

[2] The data for Malawi and Zambia are only for varieties sold in 2016. Data for Uganda is 2015

5 INDUSTRY COMPETITIVENESS

5.1 NUMBER OF ACTIVE CROP SEED PRODUCERS

The TASAI Survey recorded a total of 73 active seed producers in the DRC in the 2016 growing season, comprised of 11 seed companies, 25 individual seed producers, and 37 seed associations. Seven of the 11 seed companies are locally owned, and most are new, having started operations after 2014.

In contrast to the DRC, in other East and Southern African countries, seed is produced by seed companies, not by individual seed producers or associations. As such, most countries have considerably fewer seed producers than the DRC. Compare, for example, the 73 producers producing at least one of the four focus crops in the DRC to 23 in Malawi, 30 in Tanzania, and 16 in Zimbabwe (Table 15). Further, seed production in these other countries tends to be more regulated because the seed companies are legal entities registered by the government seed regulator.

Table 15: Number of active seed producers in 2016 (selected African countries)

Crop	Number of active seed producers in 2016							
	DRC		Malawi		Tanzania		Zimbabwe	
	Crop	Number	Crop	Number	Crop	Number	Crop	Number
Maize	Maize	56	Maize	21	Maize	29	Maize	13
Crop 2	Rice	36	Beans	19	Beans	6	Beans	8
Crop 3	Beans	28	Groundnut	14	Soya bean	2	Soya bean	6
Crop 4	Soya bean	28	Soya bean	18	Pidgeon pea	1	Sorghum	7
Total		73		22		30		16

5.2 MARKET SHARE ANALYSIS

Market concentration is calculated in two ways. The first method calculates the output, per crop, of the top four companies as a percentage of total industry output. The second method uses the Herfindahl-Hershman Index (HHI), a measure of market concentration calculated as the sum of the squares of each producer's market share. The HHI score can range from close to zero (perfect competition) to 10,000 (monopoly). In this study, the HHI is calculated using the market shares for the top four companies.

Table 16: Sales of certified seed in 2016

Market variables	Maize	Rice	Beans	Soya beans
Total seed sales (tons)	1,807	430	331	244
Market size of top 4 producers (in tons)	1,212	118	167	140
Market share of top 4 producers (%)	48%	40%	50%	57%
HHI scores (out of 10,000)	913	689	876	968
Interpretation of HHI	Excellent	Excellent	Excellent	Excellent

In 2016, the seed producers of the top four crops in the DRC sold 2,813 tons of certified seed, comprised of 1,807 tons of maize seed, 430 tons of rice seed, 331 tons of bean seed, and 244 tons of soya bean seed (Table 16).

At the national level, the DRC seed market is highly competitive, with no one seed producer dominating the market. Specifically, the combined market share of the top four seed producers is 48% for maize, 40% for rice, 50% for beans, and 57% for soya beans.

The low HHI scores also confirm the high level of competitiveness: 914 for maize, 689 for rice, 876 for beans, and 968 for soya beans (Table 16). Since there are a large number of seed producers in the DRC, the seed sector is more competitive than other countries. The HHI scores show that the level of competition in the DRC market is excellent for all crops. None of the three countries – Malawi, Uganda, Zambia – has a similar level of competition for any of their four crop markets (Table 17). By way of comparison, the level of competitiveness is fair in the bean and groundnut markets in Malawi, and the sorghum market in Uganda, poor in the maize and soya bean markets in Malawi and the bean market in Zambia, and extremely poor in the millet market in Uganda and rice and groundnut markets in Zambia.

Despite the high level of competitiveness, most seed producers in DRC would not meet the threshold for seed merchants in other countries in the region. This is because most of the seed producers (62 out of 73) are individual farmers or seed associations and do not have the technical capacity to meet the defined requirements of seed production in other countries.

Table 17: Market concentration in seed industry (selected African countries)

Crop	Market concentration using HHI (out of 10,000)							
	DRC		Malawi		Uganda		Zambia	
	Crop	Score	Crop	Score	Crop	Score	Crop	Score
Crop 1	Maize	914	Maize	3,539	Maize	1,317	Maize	1,952
Crop 2	Rice	689	Beans	2,574	Sorghum	2,483	Rice	4,898
Crop 3	Beans	876	Groundnut	2,013	Beans	1,269	Groundnut	4,765
Crop 4	Soya bean	968	Soya bean	3,308	Millet	6,401	Bean	3,530

In most African countries, maize is the most highly commercialized seed crop among cereal and legume crops, accounting for the bulk of total seed sales. Accordingly, Table 18 shows that, for the top four crops, maize seed sales account for more than 75% of seed sales in Malawi, Mozambique, and Zambia. Although the DRC produces significantly lower volumes of maize than these other countries, it exhibits the same trend of maize accounting for most of the seeds sold, about 60% of the total. DRC produces significantly lower volumes of maize seed than most of the other African countries: 1,807 tons in 2016, compared to 14,350 tons in Malawi, 4,375 tons in Mozambique and 33,018 tons in Zambia.

Table 18: Sales of certified seed in 2016 (selected African countries)

Crop	Sales of certified seed in 2016 (in tons)							
	DRC		Malawi		Mozambique		Zambia	
	Crop	Amount	Crop	Amount	Crop	Amount	Crop	Amount
Crop 1	Maize	1,807	Maize	14,350	Maize	4,375	Maize	33,018
Crop 2	Rice	430	Beans	1,061	Rice	650	Rice	295
Crop 3	Beans	331	Groundnut	1,561	Cowpea	364	Groundnut	621
Crop 4	Soya bean	244	Soya bean	1,614	Soya bean	689	Bean	719

5.3 RELIEF MARKET

In the DRC, the relief market is a key market for seed for all four crops. The main buyers in this market are UN agencies and NGOs such as Caritas, the International Committee of the Red Cross, the Norwegian Refugee Council, Word Vision, and the Food and Agriculture Organization of the United Nations (FAO). These organizations source seed by issuing bids to private suppliers.

Accurate data on the actual purchases by relief agencies is difficult to access. This information would be useful to triangulate sales data from seed producers to confirm the true size of the relief market. That said, based on information obtained from seed producers surveyed, in 2016, seed sales to the relief market accounted for 22% of total maize sales, 40% of total rice sales, 72% of total bean sales, and 41% of total soya bean sales (Table 19).

Most of the relief agencies are based in the Kivu region, as this is where most of the relief seed is needed. Because of their location, 93% of the seed (for the four crops) for the relief market is sourced from seed producers in the Kivu provinces. A significant challenge in the relief market is that the seeds supplied to the buyers tend to be low quality. In part, this is due to the low-price NGOs pay for the seed: the price of relief seed ranges from USD 0.6 and USD 0.9 per kg, whereas the market rate of seed is about USD 1.50 per kg. Because of the low prices, few seed companies respond to the bids, and the successful bidder might source grain from the grain market to sell as seed to the NGOs.

Table 19: Seed sales to the relief market

Indicator	Seed sales to relief market				
	Maize	Rice	Beans	Soya bean	**Total**
Total sales to relief market (in tons)	406.4	172.3	239.8	101.3	**919.8**
Relief sales as % of total DRC seed sales (%)	22%	40%	72%	41%	

5.4 LENGTH OF THE SEED IMPORT/EXPORT PROCESS

5.4.1 Formal imports of certified seed in 2016

The time it takes to import/export seed is calculated as the number of days from the time an import permit is requested to the time when the seed is cleared at the border. The data collection experienced notable difficulties trying to access this data from seed producers and other actors. That said, in 2016,

about 3,712 tons of seeds were formally imported into DRC. The total volume of imports exceeds the production by seed companies because some of the imports are by agro-dealers, government agencies and NGOs who distribute directly to farmers. By crop, the volume of imports was as follows: 2,106 tons of maize seed, 180.7 tons of rice seed, 240.5 tons of bean seed, and 1,183.9 tons of soya bean seed (Table 20). As these figures show, the main seed imports into DRC were maize and soya bean.

Importers include foreign seed companies, the national and provincial government institutions (including SQAV, DPPV and IPAPEL) and, to a lesser extent, agro-dealers. International research institutions usually import seed in collaboration with INERA. The main border entry points for the imports were Kasumbalesa, Bunagana, Kasindi, Ruzizi, and Boma. The main country sources of imports are Kenya, Rwanda, Uganda, Tanzania, South Africa, and Zambia.

Table 20: Volume of formal imports of certified seed

Crop	Volume of imports (in tons)	Ports of entry	Source country
Maize	2,106	Kasumbalesa, Bunagana, Goma, Kasindi, Ruzizi and Boma	Kenya, Rwanda, Tanzania, South Africa, Uganda and Zambia
Rice	180	Kasindi, Bunagana, Kasumbalesa,	South Africa, Tanzania and Uganda
Beans	241	Kasumbalesa, Kibumba, Bunagana and Luana (Lubumbashi)	Rwanda, Uganda, South Africa and Belgium
Soya beans	1184	Kasindi, Kasumblesa, Bunagana and Boma	Uganda, Rwanda, Zambia and South Africa

Table 21 shows the time it takes to obtain the import permit and to clear the seed at the border, and the total time it takes to import certified seed into DRC, as well as the taxes paid are presented in Table 20. Overall, the total time to formally import seed into the DRC ranges from 4 to 30 days, with an average of 16 days. The length of time also varies by region. Importers noted that, on average, it takes more time to obtain an import permit (9 days) than it does to clear the seed at the border (5 days).

The cost of importing the seeds depends on the amount of seed being imported and varies by region. In some cases, a volume of seed between 1 and 100 tons is charged USD 61, while any volume of seed above 100 metric tons is charged USD 118. However, the reality is sometimes different. Seed importers reported paying between USD 1 and USD 5 per bag of imported seed. In other cases, seed imports are charged 5% tax on the total value. In one case, an importer paid USD 2,100 for a consignment.

The length of the import process recorded in the DRC is comparable to other countries, such as Malawi (14 days), Tanzania (12 days), or Zambia (11 days). On the other hand, Uganda has a much shorter length of 6 days, because the customs process there is fully digitized. Despite the comparable length of the average import time, seed importers in the DRC registered considerably more dissatisfaction with the process than their counterparts in other countries, rating the process at only 20% (extremely poor). Satisfaction levels seem to vary by region: those using border points in the Eastern Region (Goma, Kasindi, Kibumba, and Ruzizi) report less satisfaction than those using points in other regions.

The most frequent complaints mentioned a weak and fraudulent import process. This compels some importers to pay bribes to speed up the process, while others report having been harassed at points of entry when they refused to pay the bribes. Another criticism cited by respondents is that import taxes are very high, even though government policy stipulates that agricultural imports should be duty-free.

Table 21: Number of days to import seed

Indicator	DRC	Kenya	Malawi	Tanzania	Uganda	Zambia
Average length of time to import seed (days)	16	38	14	12	6	11
Satisfaction with import process	20%	50%	83%	63%	71%	55%
Interpretation	Extremely poor	Fair	Excellent	Fair	Good	Fair

5.4.2 Informal imports of certified seed in 2016

In the DRC, informal imports make up a significant portion of all imports, and the TASAI study attempted to gather information on informal imports of certified seed into the DRC. As informal imports are not documented, our estimates rely on figures provided by key informants, including informal importers. However, the reported figures are likely to be an underestimate, as many informal importers are reluctant to divulge information. That said, informal imports of certified seed in 2016 totaled 150.6 metric tons, which breaks down as follows: 139 tons of maize seed, 11 tons of bean seed, and less than one ton of rice seed (Table 22). Informants also mentioned that some importers bring grain into the country, which they then sell as seed, especially in the relief market.

The main points of entry for informal imports are Kasumbalesa, Sakania, Bukavu, Mahagi, Kasindi, Ruzizi, and Kabuhanga; the main source countries are neighboring Rwanda, Uganda, and Zambia, although informal imports are known to come from as far as South Africa. Notably, informal imports were only reported in the east and south and not in the western and Northern Regions.

Table 22: Volume of informal seed imports into DRC

Crop	Volume (tons)	Ports of entry	Source country
Maize	139	Kasumbalesa, Sakania, Bukavu, Mahagi, Bunagana, Kasindi, Ruzizi and Kabuhanga	Rwanda, South Africa, Uganda and Zambia
Rice	0.6	Kamvivira	Uganda
Beans	11	Kasindi	Uganda

The length of the informal import process ranges from 1-10 days, with an average of six days. This is notably shorter than the average length of the formal process, which is 16 days. The cost of the informal import process is also lower, ranging from USD 47 to USD 2,000 per consignment. This cost covers loading and off-loading of seed bags, bribes, and any other offering. (See Table 23 for a comparison of the formal and informal processes.)

The satisfaction rating of the informal importers ranges from 30% to 90%, with an average rating of 67%. Seed importers are significantly more satisfied with the informal import process than with the formal one. This is not surprising given that the informal import process is slightly cheaper and considerably shorter than the formal process.

Table 23: Comparison between the informal and formal import process

Import indicator	Informal import process	Formal import process
Volume of imports (in tons)	150	3,712
Cost of imports (USD per consignment)	Between USD 47 and USD 2,000	Between USD 61 and USD 2,100
Time take to import (in days)	7	15
Satisfaction with import process (out of 100)	67%	20%

6 SEED POLICY AND REGULATIONS

6.1 LENGTH OF VARIETY RELEASE PROCESS

The variety release process in DRC includes the following steps:

1. Breeders submit a written request to the Technical Commission for Admission in the Catalogue (CTAC) for the registration and release of crop varieties in the catalogue;
2. SENASEM, the technical secretary receives and evaluates the application;
3. SENASEM asks for additional information (if there are any gaps in earlier submission);
4. SENASEM conducts trials i.e., Distinctness, Uniformity and Stability (DUS) and Value for Cultivation and Use (VCU);
5. SENASEM prepares and transmits the approval report to (CTAC);
6. SENASEM distributes the registration report to CTAC members for evaluation;
7. Finally, when all members agree, the crop varieties are approved and registered in the National Seed Catalogue.

The statistics related to crop varieties released in 2016 in the DRC are listed in Table 23. A total of twenty crop varieties were temporarily released between 2014 and 2016 and are awaiting to be entered in the National Seed Catalogue. Of the total 20 crop varieties released, six were maize, four were rice, and ten were bean varieties. No soya bean variety was released.

On average, the variety release process took 26 months. The differences in the length of the variety release by crop were minimal: 27 months for maize, 26 months for beans and soya beans, and 24 months for rice. On average, the cost of variety release in DRC is USD 4,692. The cost by crop is USD 3,894 for maize varieties, USD 4,450 for rice varieties, USD 4,465 for bean varieties, and USD 4,376 for soya bean varieties. The cost of variety release in the DRC is significantly higher than in other African countries: four

times the cost in Zambia (USD 1,070), eight times the cost in Tanzania (USD 504) and more than 14 times the cost in Zimbabwe (USD 350).

On average, breeders' satisfaction with the variety release process is good (62%). By crop, the figures are 61% (good) for maize, 62% (good) for rice, 67% (good) for beans, and 57% (fair) for soya bean. The breeders noted that the SENASEM is under-funded, a situation that leads to delays throughout the variety release process.

The average length of time for variety release in the DRC is similar to corresponding figures from other African countries. For example, the variety release process in the DRC is slightly shorter than in Kenya (33 months), Malawi (34 months), and Tanzania (31 months), but slightly longer than in Uganda (20 months) and Zambia (24 months). The breeders' level of satisfaction directly correlates with the duration of time for variety release. Breeders from Zambia (80%) and Zimbabwe (84%) are more satisfied than breeders in Kenya (47%) and Tanzania (54%).

Table 24: Length of variety release process in months (selected African countries)

Indicator	DRC	Kenya	Tanzania	Uganda	Zambia	Zimbabwe
Average length of variety release process (months)	26	33	31	20	24	18
Cost of variety release process (in USD)[3]	5,000	-	504	-	1,070	350
Satisfaction with variety release process	62	47	54	70	80	84
Interpretation	Good	Fair	Fair	Good	Excellent	Excellent

6.1.1 Sale of varieties not released by SENASEM

Although, technically, all varieties on the market should go through a release process overseen by SENASEM, in practice, a large number of the varieties on the market have not gone through – or have not completed – the registration process. Out of 89 varieties sold to farmers between 2014 and 2016, 69 varieties were not in the variety catalogue. These comprised 39 maize, 7 rice, 15 bean, and 8 soya bean varieties. Some had been accepted for registration and release by SENASEM but had not yet been recorded in the catalogue due to a lack of funds.

6.2 STATUS OF SEED POLICY FRAMEWORK

The DRC government approved the seed sector policy in 2006 by the ministerial decree N°042/CAB/MIN AGRI/2006/02/09. The Ministry of Agriculture is working on improving the drafts of seed policy and seed law before they could go for approval by the parliament and promulgation by the President. In the

[3] This cost includes the sum of the following: DUS application fee, DUS testing fee, NPT application fee and NPT testing fee. Information for Kenya and Uganda not obtained

meantime, the Belgian Technical Cooperation (BTC), in collaboration with the Ministry of Agriculture, has tried to reorganize the seed sector by setting up preliminary national and provincial seed councils in Kinshasa and the provinces, respectively. As part of this initiative, seed sector actors meet two-to-four times a year to discuss and define the appropriate actions related to seed production, certification, and distribution at the national and provincial levels. (See Table 25 for a detailed overview of seed policy instruments in the DRC.)

The DRC is a member of the Common Market for Eastern and Southern Africa (COMESA). The Ministry has convened several consultations to discuss the alignment of the DRC seed regulations with the COMESA harmonized seed regulations. The regulations are still awaiting parliament approval.

Table 25: Status of seed policy instruments in the DRC

Category of Policy instrument	Stage in the policy process			
	If country does not yet have a policy instrument		If country has a policy instrument	
	No draft yet	In draft form, not yet passed (Y/N)	Passed as policy/law, and currently operational (Y/N))	Year of most recent amendment
Seed Policy		Yes		
Seed Law		Yes		
Seed Regulations			Yes	
Plant Variety Protection Act		Yes		
Alignment to COMESA Harmonized Seed Regulations	NA	NA	Alignment of regulations on-going	
National Variety Catalogue	NA	NA	Yes	2012

6.3 QUALITY OF REGULATORY AND ENFORCEMENT SYSTEMS

The seed law is still in draft form. However, seed producers gave their opinion about the enforcement of seed regulations. Seed producers rate the level of satisfaction with *enforcement* of the regulations as "fair" (54%) (Table 26). This is similar to corresponding figures from neighbouring countries, where seed policy instruments are generally rated higher than their implementation. However, a significant difference between the DRC and other countries is that, in the latter, the private sector plays a more active role in the design of the policies and also contributes to the design and tracking of their implementation.

To strengthen the policy and regulatory environment in the DRC, the relevant government bodies should finalize and pass the seed policy and the seed law and make the necessary amendments to the seed regulations to provide government with policy direction for the industry. In addition, harmonizing domestic regulations with COMESA seed regulations will increase regional integration and likely yield multiple benefits, such as providing access to breeder and pre-basic seed from other member states, or the opportunity to import foundation seed from member states to improve the production of certified seed. Further, seed varieties that have been listed in the COMESA variety catalogue could be automatically incorporated into the DRC variety catalogue.

Table 26: Satisfaction with Quality and Enforcement of Seed Regulations in the DRC (comparison with selected Africa countries)

Indicator		DRC	Malawi	Tanzania	Uganda	Zambia
Satisfaction with quality of seed laws and regulations	Score (out of 100%)	-	54	70	55	77
	Interpretation	-	Fair	Good	Fair	Good
Satisfaction with enforcement of seed regulations	Score (out of 100%)	54	46	70	42	68
	Interpretation	Fair	Fair	Good	Fair	Good

6.4 ADEQUACY OF SEED INSPECTORS

SENASEM employs 105 seed inspectors in the four regions surveyed. Of the 13 countries covered by TASAI, only South Africa (180 seed inspectors) has more. Despite this high number, the seed producers in DRC rate their satisfaction with the seed inspection services as fair (56%). This is because the seed inspectors in the DRC are not sufficiently resourced to perform their functions. It is important to note that the DRC only has public seed inspectors. Countries with more advanced seed industries have accredited private seed inspection services, often in addition to government inspectors. TASAI research has found that when seed inspection services are mostly or wholly in private hands, they receive higher ratings from the seed industry. For example, inspection services in South Africa are conducted exclusively by the private sector through the national seed association, SANSOR, are rated at 79%. Zimbabwe, which has more private than public seed inspectors, has an approval rating of 84%. In these countries, the private sector effectively complements (or altogether substitutes for) the public sector. Further, private inspection services can be particularly helpful in large countries where government seed inspection services may not reach everywhere. Following other successful examples, countries such as Kenya, Malawi, Mozambique, Tanzania, and Uganda have either introduced or in the process of training and accrediting private seed inspectors. Some countries (e.g., Kenya) plan to turn seed inspection over to the private sector completely, while others (e.g., Malawi) are working towards a public/private combination. Either way, the hope is that the addition of private seed inspectors will improve service provision. Similarly, the government of the DRC, in collaboration with the World Bank, is scheduled to begin training and accrediting private inspectors in early 2018. Table 27 below provides comparative figures about public and private seed inspectors and the level of satisfaction with their work as reported by seed companies.

Table 27: Number and adequacy of seed inspection services

Indicator		DRC	Kenya	Malawi	SA	Tanzania	Zimbabwe
Number of seed inspectors	Public	105	64	37	0	48	14
	Private	0	12	0	180	0	46
	Total	105	76	37	180	48	60
Satisfaction with seed inspection services	Score (out of 100%)	56	62	49	79	59	84
	Interpretation	Fair	Good	Fair	Good	Fair	Excellent

6.5 EFFORTS TO STAMP OUT FAKE SEED

As in other African countries, fake seed is a significant problem affecting the seed industry in the DRC. In 2016, seed producers reported a total of 185 cases of fake seed. This is significantly higher than the number of cases reported in other African countries, such as Ethiopia (11 cases), Malawi (20 cases), Tanzania (18 cases), Zambia (22 cases), or Zimbabwe (52 cases). However, the number of reported cases in all countries, including the DRC, is likely to be understated, as most cases often go unreported.

When asked about the sources of fake see, seed sector stakeholders listed NGOs and other agents who purchase low-quality seed for the relief market. Because prices in the relief market tend to be lower than in regular markets, traders have an incentive to buy grain either locally or from the neighbouring countries and sell it as seed. In addition, respondents mentioned that seed producers who do not have sufficient capacity to produce quality-certified seed often resort to selling grain as seed.

Fake seed in the DRC thrives because the government does not monitor the activities in the seed sector effectively: seed is not inspected adequately at the different stages (production, packaging and marketing), and seed sales to the relief market are not tracked carefully enough. According to the seed producers interviewed, the government is yet to acknowledge the problem, which would be the first step towards finding a lasting solution. To date, enforcement officers have not arrested anyone caught selling fake seed.

Although fake seed is a common and serious problem in all countries surveyed by TASAI, the ratings recorded in the DRC are by far the lowest. Here respondents rated the government's efforts to address the challenge of fake seed in the country as "poor" (22%). By comparison, in other countries government efforts to stamp out fake seeds are rated as "fair" (e.g., Ethiopia - 57%, Tanzania - 57%, Zambia - 57%, and Zimbabwe - 56%. Table 28 below captures relevant comparative data about efforts to combat fake seeds.

Table 28: Efforts to address fake seed in DRC

Indicator		DRC	Ethiopia	Malawi	Tanzania	Zambia	Zimbabwe
Number of fake seed cases reported in 2016		105	11	20	18	22	52
Satisfaction w/ govt efforts to combat fake seed	Score-out of 100%	22	57	38	57	57	56
	Interpretation	Poor	Fair	Poor	Fair	Fair	Fair

7 INSTITUTIONAL SUPPORT

7.1 QUALITY OF SEED TRADE ASSOCIATION

Although the DRC has one national and several provincial seed associations, the TASAI study has found that a significant portion of seed producers are not aware of these associations. This is particularly true for the national organization, as only 10 of the 73 seed producers interviewed indicated that they had knowledge of the national seed association, the National Union of Agricultural Producers of Congo

(UNAGRICO). Further, only six of the ten were members of UNAGRICO. In contrast, awareness is more widespread of the provincial seed associations: 52 of the 73 producers surveyed reported knowledge of at least one provincial seed association, and 34 seed producers were members of their respective provincial association. (See Table 29 for figures on awareness and membership of seed associations.)

Table 29: Awareness and membership to seed associations in the DRC

Statistics	Awareness of seed association		Membership to seed association	
	National	Provincial	National	Provincial
Number	10	52	6	34
Percentage of total # of producers	14%	71%	8%	46%

The members of the national seed association interviewed gave a very low overall rating of the association, rating it as "poor" (32%), which is the lowest rating recorded among the countries surveyed by TASAI. As Figure 1 below shows, the second lowest rating (46%) was given to the National Seed Trade Association of Ghana (NASTAG), which was likely due to the fact that the organization is less than two years old and is yet to have a fully-functioning secretariat. Associations from other countries are more established and have an effective working relation with government through which seed companies can engage on seed sector issues – see, for example, Zambia (74%), Tanzania (71%), or Kenya (62%). SANSOR, South Africa's national seed trade association, is rated the highest (81%) because it effectively delivers key services, such as seed certification, seed inspection and phytosanitary services, to its members.

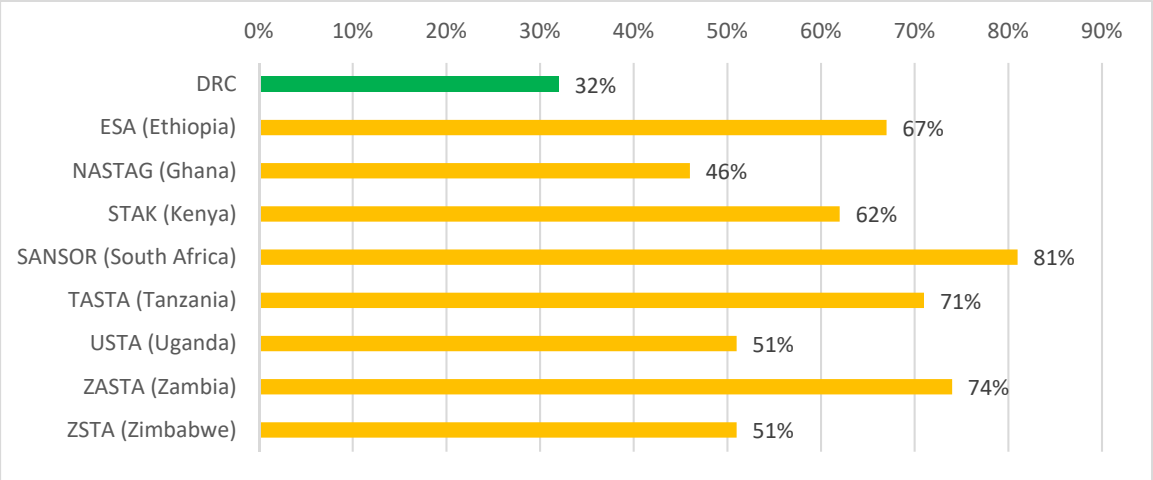

Figure 1: Overall Quality of Seed Associations in Africa

Figure 2 below shows the levels of satisfaction reported by UNAGRICO members. The numbers reveal that members are quite dissatisfied with all six service areas, including activity on important seed sector issues (37%), effectiveness in advocacy (32%), managerial ability (32%), providing value to members (30%), democracy in elections (35%), and ability to mobilize resources (23%), which is rated lowest. In general, members feel that the seed association adds little if any value to the seed industry in the country.

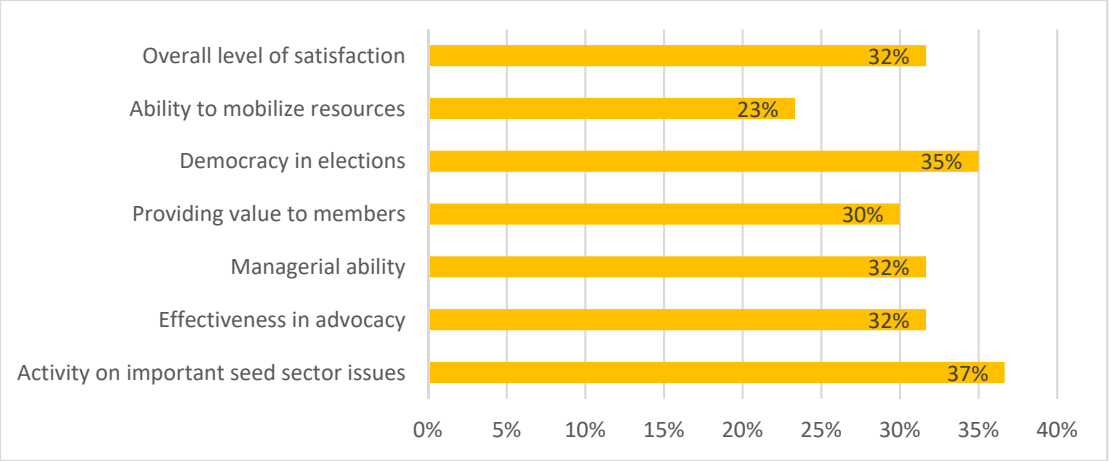

Figure 2: Members' satisfaction with UNAGRICO

7.2 AVAILABILITY OF EXTENSION SERVICES FOR SMALLHOLDER FARMERS

In 2016, the four regions surveyed had a total of 1,204 agricultural extension workers. Most of them (83%) worked for the National Extension Service (SNV), the country's official extension service. In comparison, the private sector has 210 extension workers in the four regions, which is a much smaller number. The private sector extension agents are employed by seed producers (7 of whom have extension workers) and by a small number of NGOs and private agribusiness enterprises.

The total number of extension workers in the four regions translates to one extension worker for every 5,868 farming households. As Table 30 shows, this is significantly lower than other African countries: Malawi (1:1,388), Mozambique (1:1,045), Tanzania (1:831) and Zambia (1:560). Compounding the shortage of extension workers is the fact that the agents lack the financial and logistical means to carry out their work effectively in all areas of the country.

Despite the shortage of extension agents, the seed producers rated their satisfaction with the availability of extension services as fair (54%), which, while quite low, is similar to numbers reported in other African countries (e.g., Malawi (47%), Tanzania (56%), and Zambia (55%)). It is important to note, however, that seed producers in the DRC reported higher levels of satisfaction with private-owned extension services, saying that they were more reliable than government providers.

Table 30: Availability of extension services

Indicators		DRC	Malawi	Mozambique	Tanzania	Zambia
Ratio of extension workers to farming households		1:5,868	1:1,388	1:1,045	1:831	1:560
Satisfaction with extension services	Score-out of 100%	53	47	56	56	55
	Interpretation	Fair	Fair	Fair	Fair	Fair

8 SERVICE TO SMALLHOLDER FARMERS

8.1 AVAILABILITY OF SEED IN SMALL PACKAGES

Seed in small packages gives smallholder farmers who cannot afford to buy large quantities of seed access to more – and presumably, better - varieties. Table 25 shows that about a third (31%) of all seed sold in 2016 was available in small packages weighing 2 kg or less. The package sizes by crop varied: the relevant overall figures were 28% for maize, 26% for rice, 31% for beans and 55% for soya beans. As shown in Table 31, this is similar to, and even greater, than the percentage of seed in small packages in some countries (e.g., Malawi-29% or Zambia-19%). However, the volumes are still much lower than in other countries, such as Ghana (66%), Kenya (79%), and Tanzania (93%). (In the latter, the high percentage in Tanzania is due to a requirement by the government that maize seed procured under the subsidy program must be packed in 2kg bags.)

Seed producers and agro-dealers rate their satisfaction with the availability of seed in small packages as "fair" (57%). This is lower than the satisfaction ratings of seed companies in other countries like Malawi (78%), Tanzania (86%), and Zambia (72%).

Table 31: Availability of seed in small packages

Indicators		DRC	Ghana	Malawi	Tanzania	Zambia
% of seed sold on small packages (2kg or less)		31%	66%	29%	93%	19%
Satisfaction with availability of seed in small packages	Score (out of 100%)	57	72	78	86	72
	Interpretation	Fair	Good	Good	Excellent	Good

8.2 CONCENTRATION OF RURAL AGRO-DEALER NETWORK

A baseline survey conducted by AGMARK in 2016 (AGMARK, 2017), revealed that North and South Kivu provinces had 199 agro-dealers. Unfortunately, the survey did not cover the other regions, so data from other regions is not available at this point. These agro-dealers reached about 19,533 farmers during the peak season and 10,245 farmers during the low season. This translates to one agro-dealer serving about 150 farmers. However, the farming population in North and South Kivu is about 1.84 million farming households (derived from (MPSMRM, 2014)), which implies that most of the farmers (about 90%) are not served by agro-dealers.

In the two Kivu provinces, there is one agro-dealer for every 9,248 farming households. This is an extremely low ratio, and in practice means that most farmers having little-to-no access to agro-dealers. The ratio is likely to be much lower in the other regions. All the other countries surveyed have a higher ratio of agro-dealers per household: Kenya (1:1,221), Malawi (1:1,320), Tanzania (1:2,900), and Zambia (1:3,276). Not surprisingly, seed producers' in the DRC rate their satisfaction with the concentration of the agro-dealer network as poor (30%). As shown in Table 32, seed companies in the other countries are

considerably more satisfied with the available agro-dealer network (e.g., Malawi – 64%, Tanzania – 66%, and Zambia – 57%).

Table 32: Concentration of agro-dealer network

Indicators		DRC[4]	Malawi	Tanzania	Zambia
Number of agro-dealers		199	2,000	2,000	450
Ratio of agro-dealers to farming households		1:9,248	1:1,320	1:2,900	1:3,276
Satisfaction with concentration of agro-dealer network	Score (out of 100%)	30%	64%	66%	57%
	Interpretation	Poor	Good	Good	Fair

8.3 SEED-TO-GRAIN PRICE RATIO AT PLANTING

The seed-to-grain price ratios for the four crops in DRC are as follows: maize hybrid (5.5:1), maize OPV (5.0:1), rice (1.8:1), beans (1.4:1), and soya beans (1.6:1). These ratios are similar to figures reported in other African countries. In all countries, the seed-to-grain price ratios for maize hybrid are higher than the ratios for all other crops. This is understandable given the high price of hybrid maize seed relative to other crop seed.

The most notable differences in the ratios were recorded between the DRC and countries with more developed seed sectors, such as Zambia, Zimbabwe and South Africa (Table 33). In these countries, the ratios are higher because farmers understand the benefits of hybrid seeds and are willing to pay higher prices for new and improved varieties. For example, the ratio for hybrid maize in Zambia is 13.4:1, compared to 4.2:1 for Malawi, and 6.2:1 for Uganda.

Table 33: Seed-to-grain price ratios

Crop	Seed-to-grain price ratio							
	DRC		Malawi		Uganda		Zambia	
	Crop	Ratio	Crop	Ratio	Crop	Ratio	Crop	Ratio
Crop 1	Maize hybrid	5.5:1	Maize hybrid	4.2:1	Maize hybrid	6.1:1	Maize hybrid	13.4:1
	Maize OPV	5.0:1	Maize OPV	4.1:1	Maize OPV	3.1:1	Maize OPV	10.0:1
Crop 2	Rice	1.8:1	Beans	1.5:1	Sorghum	2.3:1	Rice	1.4:1
Crop 3	Beans	1.4:1	Groundnut	1.9:1	Beans	1.6:1	Groundnut OPV	1.3:1
Crop 4	Soya bean	1.6:1	Soya bean	1.8:1	Millet	1.7:1	Beans	2.3:1

[4] For North and South Kivu only

PART 2:
REGIONAL REPORTS

9 PART 2: REGIONAL REPORTS

9.1 INTRODUCTION

Part 2 of this report describes the findings of the TASAI study with a regional focus. While in the case of other countries the findings and the reports are confined to the national level, in the case of the DRC, the country's size and the regional variations in terms of geography, infrastructure, political stability, etc., warrant the preparation of regional reports. Note, however, that, while the regional reports contain useful, in-depth information, they are also somewhat repetitious. As a reminder, please refer to Figure 1 on page 14 for the provinces and regions included in the TASAI study.

10 SOUTHERN REGION

10.1 INTRODUCTION

The Southern Region covers the former Katanga province. Katanga was one of the eleven provinces of DRC between 1966 and 2015, when it was split into the Tanganyika, Haut-Lomani, Lualaba, and Haut-Katanga provinces. Katanga's area covers 497,000 square kilometres. The region's former capital, Lubumbashi is the second largest city in DRC. This research covered two of the provinces – Haut-Katanga and Lualaba.

10.2 RESEARCH AND DEVELOPMENT – SOUTHERN REGION

10.2.1.1 Number of varieties sold

Between 2014 and 2016, a total of 27 out of the 89 varieties of the four crops were sold in this region, second only to the Eastern Region, where 56 varieties were sold. By crop, 18 out of 41 maize varieties, only two out of 20 rice varieties, only two out of 16 bean varieties, and five out of 12 soya bean varieties were sold in the region during this period. Table 34 shows that, across the four crops, many varieties available in other regions of the DRC are not sold in this region.

Table 34: Number of varieties sold to farmers in the last three years, by region

CROP	Number of varieties sold to farmers (2014-2016)				
	East	South	West	North	Total[5]
Maize	19	18	12	2	41
Rice	15	2	9	3	20
Beans	15	2	0	0	16
Soya beans	7	5	3	0	12
Total	**56**	**27**	**24**	**5**	**89**

[5] Some varieties are sold in more than one region

10.2.1.2 Availability of foundation seed

Seed producers in the Southern Region rate their satisfaction with the availability of foundation seed is "good" for maize (76%) and soya beans (65%). This is mainly because of the foreign companies that are located in this region. These companies access their seed from their parent companies outside DRC. The satisfaction with the availability of foundation seed is fair for rice (50%) and beans (58%). Table 35 shows recorded levels of satisfaction with the availability of foundation seed across the four regions.

Table 35: Availability of foundation seed, by region

Region	Provinces	Satisfaction (out of 100%)				
		Maize	Rice	Beans	Soya beans	Overall
East	North & South Kivu	68	61	68	60	64
South	Katanga, Lualaba	76	50	58	65	62
		Good	Fair	Fair	Good	
West	Kongo Central, Kwilu, Kinshasa	50	63	-	60	58
North	Ubangis, Mongala, Equatuer	67	68	-	-	68
Overall		65	61	63	62	

10.3 INDUSTRY COMPETITIVENESS – SOUTHERN REGION

10.3.1 Number of active seed producers

Only 10 out of a national total of 73 seed producers are located in the Southern Region. Of these, four are seed companies, five are seed associations, and one is an individual seed producer (Table 36). Further, three out of the total four foreign seed companies are in this region.

Table 36: Number of seed producers in the DRC, by region

Region	Category of seed producers				Producers in each region as % of total producers (73)
	Seed companies	Seed associations	Individual seed producers	Total	
East	7	14	23	44	60%
South	4	5	1	10	14%
West	0	2	11	13	18%
North	0	4	2	6	8%
TOTAL	11	25	37	73	

Seed producers in the Southern Region account for less than 20% of the total number of seed producers for each crop in the country. Broken down by crop, the percentages are 11% for maize seed producers, 6% for rice seed producers, 14% for bean seed producers, and 18% for soya bean producers.

Table 37: Breakdown of seed producers, by crop and region

Region	Number of seed producers, by crop			
	Maize	Rice	Beans	Soya beans
East (North and South Kivu)	32	20	24	21
South (Katanga, Lualaba)	6	2	4	5
West (Kongo Central, Kinshasa, Kwilu)	12	8	0	0[6]
North (Ubangis, Mongala, Equatuer)	6	6	0	2
TOTAL	56	36	28	28
Seed producers in the south, as % of total number of seed producers for each crop	11%	5%	14%	18%

10.3.2 Market size

In 2016, the Southern Region sold the most maize seed (41% of the total sold in the country). This may be due to the greater presence of foreign seed companies than in other regions. In contrast, the region accounted for only 1.4% of rice seed sales, 5% of bean seed sales, and 18% of soya bean sales.

As a result of having few seed producers in the Southern Region, the level of competitiveness is low. The market share of the top four seed producers is 89% for maize seed, 100% for rice seed, 88% for bean seed, and 100% for soya bean seed.

Table 38: Market share and market size, by region

Market share variables	Maize	Rice	Beans	Soya beans	Total
Eastern Region sales (tons)	562	309	315	192	1,379
Southern Region sales (tons)	940	6	16	45	1,007
Western Region sales (tons)	248	97	0	2	347
Northern Region sales (tons)	57	19	0	44	79
DRC total seed sales (tons)	1,806	430	331	244	2,813
Sales (South) as % of overall DRC crop sales	52%	1.4%	5%	18%	
Market Share of top four producers (%) – South	89%	100%	88%	100%	
HHI – South	3,132	7,622	2,224	7,861	

10.3.3 Relief market

Seed producers from the Southern Region are not major suppliers of seed to the relief market. Seed sales from this region are minimal—less than 1% for maize seed and bean seed. No rice seed or soya bean seed

[66] One agro-dealer imports and sells soya bean seed, as an agent of a foreign seed company. Not counted as a seed producer.

were sold to the relief market. Table 39 provides data on seed sales to the relief market in the various regions.

Table 39: Seed sales to the relief market, by region

Region	Provinces	Seed sales to relief market				
		Maize	Rice	Beans	Soya beans	Total
East	North Kivu, South Kivu	353	164	240	101	858
South	Katanga	1	0	0	0	1
West	Kongo Central	36	6	0	0	42
North	Equatuer, Ubangis, Mungala	16	2	0	0	18
Total sales to relief market		406	172	240	101	920
Relief sales (Southern Region), as % of total sales (relief market)		0.2%	0%	0.01%	0%	

10.3.4 Seed imports

10.3.4.1 Formal seed imports

The time it takes to formally import seed is calculated as the number of days from the time an import permit is requested to the time when the seed is cleared at the border. There were notable difficulties trying to access this data from seed producers and other actors. As Table 40 shows, in 2016, about 3,534 tons of seeds were formally imported in DRC. Of this amount, about 1,406 tons were imported into the Southern Region. The imports were mainly for maize and soya bean seed. The main border point of entry was Kasumbalesa, although some imports also passed through Luano airport in Lubumbashi. The main importers were the provincial affiliates of INERA and the Ministry of Agriculture (National Quarantine Services), seed producers, and a few commercial farmers. By country, the main sources of the imports were Zambia and South Africa.

On average, the total length of the formal import process in the Southern Region is 17 days. On average, most of the time is taken up by obtaining the import permit (about 11 days), followed by clearing the seed at the border (about 6 days). This is close to the national average of 16 days for the formal import process. Seed importers in the region are not satisfied with the formal import process, rating it as “poor” (30%).

Table 40: Formal seed imports into DRC (Southern Region)

Import indicators	East	West	South	Total
Crops imported	Maize, soya beans	Maize, soya beans, rice	Maize, soya beans,	
Exporting country	Kenya, Rwanda, Uganda, Zambia	Zambia, South Africa, Rwanda, Nigeria, Zimbabwe	Zambia, South Africa	
Border points	Bunagana, Kasindi, Ruzizi	Boma, Kinshasa airport, Kasumbalesa, Matadi	Kasumbalesa, Luana	

Importers	Seed producers, INERA	INERA, seed producers, Ministry of Agriculture, CIAT	INERA, Seed producers, commercial farmers	
Imports (in tons)	79	1,876	1,406	3,362
Import time (days)	5	20	17	16
Satisfaction with import process	10%	50%	30%	20%

10.3.4.2 Informal imports of certified seed in 2016

Informal imports are not officially documented; nevertheless, the TASAI survey collected available data on informal imports. Based on the findings (Table 41), informal imports occurred only in the Southern and Eastern Regions. A total of 68 tons of seed were imported informally into the Southern Region in 2016, accounting for 54% of total informal seed imports. However, this amount is likely an understatement, as most informal importers are reluctant to divulge information. All the informal imports into this region were maize seed. The border points of entry are Kasumbalesa and Sakania, and the imports are sourced from Zambia and South Africa.

Table 41: Informal imports into DRC, by region

Import indicators	East	South	Total
Crops imported	Maize, beans, rice	Maize	
Exporting country	Rwanda, Uganda	Zambia, South Africa	
Border points	Bunagana, Bukavu, Kabuhanga, Kasindi, Ruzizi	Kasumbalesa	
Imports (in tons)	58	68	126
Cost of import (USD/bag)	14	8	12
Import time (days)	9	3	7
Satisfaction with import process (out of 100%)	62%	70%	67%

The duration of the informal import process for certified seed ranges from one to five days, with an average of three days. This is notably shorter than the 16 days recorded for formal imports. The cost of informal imports ranges from USD 3 to USD 18 per bag, with an average of USD 8 per bag. Given the lower cost and shorter duration, it is no surprise that seed importers in the Southern Region are much more satisfied with the informal import process, rating it as "good" (70%), while rating the formal process as "poor" (30%).

10.4 SEED POLICY AND REGULATION – SOUTHERN REGION

10.4.1 Quality and enforcement of seed regulations

As shown in Table 42, seed producers in the Southern Region rated the quality of the seed regulations as fair (45%), lower than national average of 58%. In addition, the producers rated the quality of enforcement as poor (33%), notably lower than the national average of 51% ("fair"). Because of the high level of imports in this region, seed producers interact frequently with government institutions, and, based on their experiences, contend that government does not implement the regulations well.

Table 42: Satisfaction with enforcement of seed regulations, by region

Policy indicator		East	South	West	North	National
		North and South Kivu	Katanga, Lualaba	Kongo Central, Kinshasa	Sud/Nord Ubangi, Mongala, Equatuer	
Satisfaction with quality of seed regulations	Score-out of 100%	58	45	68	50	58
	Interpretation	Fair	Fair	Good	Fair	Fair
Satisfaction with enforcement of seed regulations	Score-out of 100%	47	33	73	55	51
	Interpretation	Fair	Poor	Good	Fair	Fair

10.4.2 Adequacy of seed inspection services

SENASEM employs a total of 105 seed inspectors in the four regions. Despite being the second largest regional producer of certified seed and a major importer of certified seed, the Southern Region only has 7 inspectors (7% of the total). Not surprisingly, seed producers in the region are not satisfied, rating the adequacy of these inspectors as only fair (50%). In addition, one of the new provinces in this region – Lualaba – does not have any seed inspectors. (See Table 43 for information on seed inspection services by region.)

Table 43: Number and satisfaction with adequacy of seed inspection services, by region

Seed inspection services	East	West	South	North	Total
Number of seed public inspectors	33	59	7	6	105
% of seed inspections	31%	56%	7%	6%	100%
Average satisfaction rating (out of 100%)	47	75	50	50	56
Interpretation	Fair	Good	Fair	Fair	Fair

10.4.3 Efforts to stamp out fake seed

The challenge of fake seed is a major problem in the DRC. In 2016, a total of 185 cases of fake seed were reported. About one quarter of these cases (40) were reported in the Southern Region. Seed producers are highly dissatisfied with the government's efforts to address the problem of fake seed, rating the efforts as "extremely poor" (3%). See Table 44 for data gathered on fake seeds, by region.

Table 44: Satisfaction with efforts to stamp out fake seed, by region

	East	West	South	North	Total
	Kivu	Kongo Central	Katanga	Ubangi Mongala, Equateur	
How many cases of fake seed did you counter in 2016?	133	11	40	1	185
Average satisfaction rating	19%	0%	3%	0%	22%
Interpretation	Extremely poor	Extremely poor	Extremely poor	Extremely poor	Extremely poor

10.5 INSTITUTIONAL SUPPORT – SOUTHERN REGION

10.5.1 Quality of seed trade associations

All the seed producers in the Southern Region are aware of the existence of the provincial seed association called Association de Productuers Semenciers du Katanga (APSKA), and 80% are members of the association. In contrast, only 30% reported knowledge of the national seed association, and all of these producers were also members of the association. Table 45 shows comparative data for all regions.

Table 45: Awareness and membership to national and provincial seed associations

Seed association indicators		Eastern Region	Southern Region	Western Region	Northern Region	Total
Awareness of seed association (No.)	National	7	3	0	0	10
	Provincial	29	10	11	2	52
Membership to seed association (No.)	National	3	3	0	0	6
	Provincial	23	8	3	0	34

Seed producers in the Southern Region reported low satisfaction levels with both associations, although they are far less satisfied with the national seed association than with APSKA: overall satisfaction is "poor" (39%) with APSKA and "extremely poor" (7%) with the national association. See Figure 3 for detailed ratings of the provincial and national seed associations reported in the Southern Region. Seed producers rate the national association extremely poor in all the service areas. However, they rate the provincial association fair in the area of democracy in elections (50%), but poor in all the other areas.

10.5.2 Availability of extension services

The region has only nine extension workers, all of whom are employed by the private sector and NGOs. The national extension service (SNV) does not have employees in the Southern Region. (See Table 46 for a snapshot of extension workers by region.) Although few in numbers, the extension workers were rated as "excellent" (80%), as they work directly work with seed producers. The good rating notwithstanding, there is a significant need for public extension workers in the region.

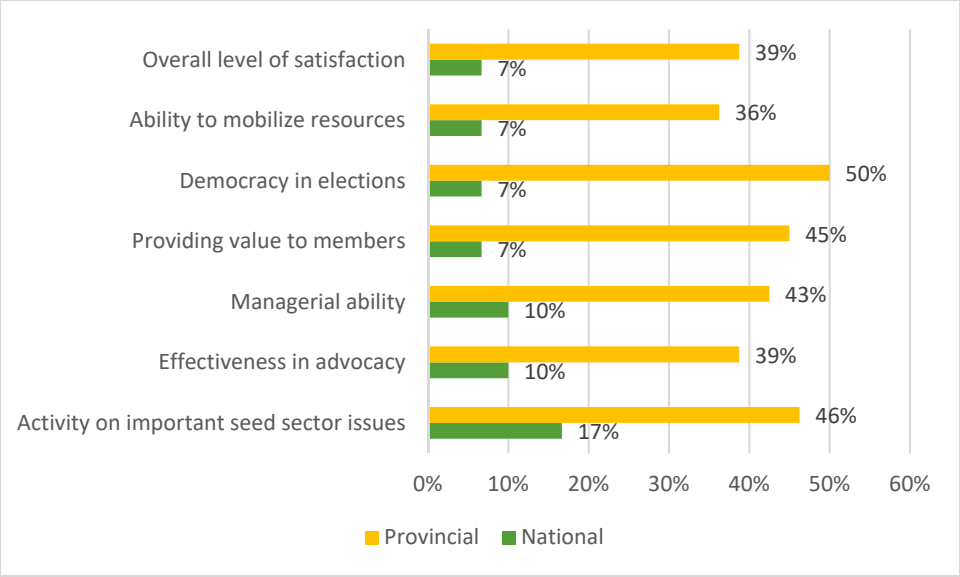

Figure 3: Members' satisfaction with provincial and national seed associations (Southern Region)

Table 46: Number of agricultural extension workers, by region

Indicators		Eastern Region	Southern Region	Western Region	Northern Region	National total
# of extension workers	Government	994	0	0	0	994
	Private/ NGO	105	9	90	6	210
	Total	1,099	9	90	6	1,204
% of national total		91.3%	0.7%	7.5%	0.5%	

10.6 SERVICE TO SMALLHOLDER FARMERS – SOUTHERN REGION

10.6.1 Concentration of the agro-dealer network

Agro-dealers are a new concept in the DRC, introduced only in the last five years under the PASA project, which operates in the east of the country. That said, the concept of agro-dealers is relatively more developed in the Southern Region, where about one third of the agro-dealers (78 out of 279) are located. Of these 23 are hub agro-dealers and 55 are rural agro-dealers. These numbers translate to an agro-dealer:farmer ratio of 1:21,548, which is inadequate to properly address the needs of all farmers in the region. In addition, most agro-dealers are not trained and have little knowledge about agro-inputs. Further, only a few hub agro-dealers have developed strong and effective networks with rural agro-dealers across the region. For all these reasons, seed producers' level of satisfaction with agro-dealers in the region is "poor" (40%). (See Table 47 for all data and ratings on agro-dealers.)

Table 47: Concentration of agro-dealer network, by region

Indicator	East[7]	South	West	North	Total
Number of hub agro-dealers	-	23	2	0	42
Number of rural agro-dealers	-	55	0	0	117
Total number of agro-dealer	199	78	2	0	279
Number of agriculture households	1,713,495	1,680,734	2,454,332	1,216,342	7,064,903
Ratio of agro-dealers to agriculture households	1:8,610	1:21,548	0	0	1:25,322
Satisfaction with concentration of agro-dealer network (out of 100%)	33	40			
Interpretation	Poor	Poor			

10.6.2 Seed in small packages

Seed in small packages gives smallholder farmers who cannot afford to buy large quantities access to more—and presumably, better—varieties. As shown in Table 48, seed in small packages was only sold in the Eastern and Southern regions, because most of the seed companies are based in these regions. In Katanga only 14% of maize seed and 8% of bean seed was sold in small packages. Despite the low numbers, seed producers and agro-dealers in the region reported a satisfaction level of "good" with the availability of seed in small packages.

Table 48: Availability of seed in small packages.

		Maize	Rice	Beans	Soya beans
East (North and South Kivu)	% seed sold in size of 2kg or less	58%	37%	32%	70%
	Satisfaction with availability of seed in small packages	66	55	55	65
South (Katanga)	% seed sold in size of 2kg or less	14%	0%	8%	0%
	Satisfaction with availability of seed in small packages	55	-	70	-
West (Kongo Central)	% seed sold in size of 2kg or less	-	-	-	-
	Satisfaction with availability of seed in small packages	-	-	-	-
North (Mongala, Ubangis, Equateur)	% seed sold in size of 2kg or less	-	-	-	-
	Satisfaction with availability of seed in small packages	-	-	-	-
Overall	% seed sold in size of 2kg or less	28%	26%	31%	55%

[7] For the Eastern Region, the breakdown of agro-dealers as either hub or rural was not available

10.6.3 Seed-to-grain price ratio

The seed-to-grain price ratios for maize in the Southern Region were the highest among all the regions: (16.6:1 for hybrid maize and 9.2:1 for OPV maize) and were significantly higher than the national average of 5.5:1 for hybrid maize and 5.0:1 for OPV maize. The ratios for maize seed are high in this region because of the low price of maize grain. Maize in Katanga costs USD 0.3 per kg, which is lower than the national average of USD 0.6 per kg. The low grain price is likely due to the high supply of maize from commercial farmers. In addition, the region is home to many mining companies in the region that support commercial farmers who produce maize and process it into flour for distribution to mine employees, thereby reducing the demand for maize grain.

By contrast, the seed-to-grain price ratios for the other crops: rice (1.3:1), beans (1.1:1) and soya beans (1.1:1) were lower than the national ratios, 1.8:1 (rice), 1.4:1 (beans) and 1.6:1 (soya beans). Table 49 shows a breakdown of the prices and ratios; a more detailed breakdown is available in Appendix 4.

Table 49: Seed-to-grain price ration, by region

Regions	Seed-to-grain price ratios in DRC				
	Maize OPV	Maize Hybrid	Rice	Beans	Soya beans
East	2.2:1	4.0:1	1.8:1	2.0:1	2.3:1
South	9.2:1	16.6:1	1.3:1	1.1:1	1.1:1
West	-	2.5:1	2.5:1	1.6:1	2.0:1
Northern	6:1		7.6:1	1.4:1	2.0:1
National	5:1	5.5:1	1.8:1	1.4:1	1.6:1

11 EASTERN REGION

11.1 INTRODUCTION

The Eastern Region covers two provinces, North Kivu and South Kivu. N. Kivu has an area of 59,483 km² and population of 5.77 (2010). S. Kivu has an area of 65,070 km² and a population of 5.7 million (2015).

11.2 RESEARCH AND DEVELOPMENT – EASTERN REGION

11.2.1.1 Number of varieties sold

Between 2014 and 2016, a total of 56 out of the 89 varieties of the four crops were sold in this region, the highest among the regions. By crop, 19 out of 41 maize varieties, 15 out of 20 rice varieties, 15 out of 16 bean varieties, and 7 out of 12 soya bean varieties were sold in the region during this period. Table 50 shows the breakdown by crops sold in the various regions.

Table 50: Varieties sold in the last three years (2014-2016)

CROP	East	South	West	North	Total[8]
Maize	19	18	12	2	41
Rice	15	2	9	3	20
Beans	15	2	0	0	16
Soya beans	7	5	3	0	12
Total	**56**	**27**	**24**	**5**	**89**

11.2.2 Availability of foundation seed

Seed producers in the Eastern Region access foundation seed primarily from INERA. Their satisfaction with the availability of foundation seed is "good" for all four crops: 67% for maize, 61% for rice, 68% for beans, and 60 % for soya beans. The good rating is primarily due the close proximity of seed producers to the research institutions that produce foundation seed.

Table 51: Availability of foundation seed

Region	Provinces	Satisfaction (out of 100%)				
		Maize	Rice	Beans	Soya beans	Overall
East	North & South Kivu	68	61	68	60	64
		Good	Good	Good	Good	Good
South	Katanga, Lualaba	76	50	58	65	62
West	Kongo Central, Kwilu, Kinshasa	50	63	-	60	58
North	Ubangis, Mongala, Equatuer	67	68	-	-	68
Overall		65	61	63	62	

[8] Some varieties are sold in more than one region

11.3 INDUSTRY COMPETITIVENESS – EASTERN REGION

11.3.1.1 Number of active seed producers

Forty-four out of a national total of 73 seed producers are located in the Southern Region. Of these, seven are seed companies, 14 are seed associations, and 23 are individual seed producers. Further, one out of the total four foreign seed companies is in this region. This region is an active seed producing area of the country, where most of the seed companies are locally owned and most have operated for a few years only. Table 52 provides a breakdown of seed producers by region.

Table 52: Number of seed producers, by region

Region	Category of seed producers				Producers per region as % of total producers (73)
	Seed companies	Seed associations	Individual seed producers	Total	
East	7	14	23	44	60%
South	4	5	1	10	14%
West	0	2	11	13	18%
North	0	4	2	6	8%
TOTAL	11	25	37	73	

Since the Eastern Region has the highest number of seed producers for each category, it comes as no surprise that this region also has the highest number of seed producers by crop. The region is home to 57% of the maize seed producers, 55% of the rice seed producers, 86% of the bean seed producers and 75% of the soya bean producers (Table 53).

Table 53: Breakdown of seed producers, by crop

Region	Crops			
	Maize	Rice	Beans	Soya beans
East	32	20	24	21
South	6	2	4	5
West	12	8	0	0[9]
North	6	6	0	2
TOTAL	56	36	28	28
Producers in Eastern Region as % of total # of producers by crop	57%	55%	86%	75%

11.3.2 Market size

As Table 54 shows, the Eastern Region is the largest producer of certified seed in the DRC, accounting for 31% of maize seed sales, 72% of rice seed sales, 95% of bean seed sales, and 79% of soya bean sales. This

[99] One agro-dealer imports and sells soya bean seed, as an agent of a foreign seed company. Not counted as a seed producer.

is to be expected as the region has most seed producers. With so many producers located in the region, the level of competitiveness of high. The combined market share of the top four seed producers in this region is 29% for maize seed, 53% for rice seed, 53% for bean seed, and 60% for soya beans. This shows that none of the seed producers dominates any of the four seed markets.

Table 54: Market share and market size, by region

Market share variables	Maize	Rice	Beans	Soya beans	Total
Eastern Region sales (tons)	562	310	315	193	1,379
Southern Region sales (tons)	940	6	16	45	1,007
Western Region sales (tons)	248.4	97	0	2	347
Northern Region sales (tons)	56.35	19	0	4	79
DRC total seed sales (tons)	1,806	430	331	244	2,813
Sales (East) as % of overall DRC sales	31%	72%	95%	79%	
Market Share of top four producers (%) - East	29%	53%	53%	60%	

11.3.3 Relief market

Seed producers from the Eastern Region are major suppliers of seed to the relief market, with sales from this region accounting for nearly all of the seed sold to the relief market: 87% for maize, 95% for rice, and 99.9% for beans, and 99.8% for soya beans (Table 55). In addition, the relief market is also a key target for seed producers in the region, accounting for 63% of total maize seed sales, 53% of total rice seed sales, 76% of total bean seed sales, and 52% of total soya bean seed sales from the region.

Table 55: Seed sales to the relief market

Region	Provinces	Seed sales to relief market				
		Maize	Rice	Beans	Soya beans	Total
East	North Kivu, South Kivu	353	164	240	101	858
South	Katanga	1	0	0	0	1
West	Kongo Central	36	6	0	0	42
North	Equatuer, Ubangis, Mungala	16	2	0	0	18
Total sales to relief market		406	172	240	101	920
Relief sales (Eastern Region), as % of total sales (relief market)		87%	95%	99.9%	99.8%	
Relief sales (Eastern Region), as % of total sales (Eastern Region)		63%	53%	76%	52%	

Seed imports

11.3.3.1 Formal seed imports

The time it takes to formally import seed/export seed is calculated as the number of days from the time an import permit is requested to the time when the seed is cleared at the border. There were notable difficulties trying to access this data from seed producers and other actors. In 2016, 3,362 tons of seeds were formally imported into DRC. Of this amount, only 79 tons were formally imported into the Eastern Region, and the imports were primarily maize and soya bean seed. The main border points of entry were Bunagana, Kasindi, and Ruzizi. The main importers were the seed producers and INERA, and the imports were sourced from Uganda, Kenya, Rwanda and Zambia.

On average, the length of the formal import process in the Eastern Region is five days, notably shorter than the national average of 16 days. Despite this, seed importers in this region are not satisfied with the import process, rating it as "extremely poor" (10%) (Table 56). This low score is mainly due to weak regulatory enforcement at the border, leading to delays clearing the seed for entry into the country.

Table 56: Formal seed imports, by region

Import indicators	East	West	South	Total
Crops imported	Maize, soya beans	Maize, soya beans, rice	Maize, soya beans,	
Exporting country	Kenya, Rwanda, Uganda, Zambia	Nigeria, S. Africa, Rwanda, Zambia, Zimbabwe	Zambia, South Africa	
Border points	Bunagana, Kasindi, Ruzizi	Boma, Kinshasa airport, Kasumbalesa, Matadi	Kasumbalesa, Luana	
Importers	Seed producers, INERA	INERA, seed producers, Ministry of Agric., CIAT	INERA, seed producers, commercial farmers	
Imports (in tons)	79	1,876	1,406	3,362
Import time (days)	5	20	17	16
Satisfaction with import process	10%	50%	30%	20%

11.3.3.2 Informal imports of certified seed in 2016

Informal imports are not officially documented; nevertheless, the TASAI survey collected available data on informal imports. Based on the findings, informal imports occurred only in the Southern and Eastern Regions. As Table 57 shows, a total of 58 tons of seed were imported informally into the Eastern Region, accounting for 46% of total informal seed imports. However, this amount is likely an understatement, as most informal importers are reluctant to divulge information. Most of the informal seed imports into this region were maize seed (47 tons), while small amounts of bean seed (11 tons) and rice seed (less than one ton) were also imported informally. The border points of entry are Bunagana, Bukavu, Kabuhanga, Kasindi and Ruzizi, and the source countries are Rwanda and Uganda.

Table 57: Informal imports into DRC, by region

Import indicators	East	South	Total
Crops imported	Maize, beans, rice	Maize	
Exporting country	Rwanda, Uganda	Zambia, South Africa	
Border points	Bunagana, Bukavu, Kabuhanga, Kasindi, Ruzizi	Kasumbalesa	
Imports (in tons)	58	68	126.3
Cost of import (USD/bag)	14	8	11.6
Import time (days)	9	3	6.9
Satisfaction with import process (out of 100%)	62%	70%	67%

The duration of the informal import process for certified seed ranges from five to 15 days, with an average of nine days. This is notably shorter than the 16 days recorded for formal imports. Given the lower cost and shorter duration, seed importers in the Southern Region are much more satisfied with the informal import process, rating it as "good" (62%), while rating the formal process as "extremely poor" (10%).

11.4 SEED POLICY AND REGULATION – EASTERN REGION

11.4.1 Quality and enforcement of seed regulations

The seed producers in the Eastern Region rated the quality of the seed regulations as fair (58%), same as the national average. In addition, the producers rated the quality of enforcement as fair (47%), slightly lower than the national average (51%) (Table 58).

Table 58: Satisfaction with quality of enforcement of seed regulations

Policy indicator		East	South	West	North	National
		North and South Kivu	Katanga, Lualaba	Kongo Central, Kinshasa	Sud/Nord Ubangi, Mongala, Equatuer	
Satisfaction with quality of seed regulations	Score-out of 100%	58	45	68	50	58
	Interpretation	Fair	Fair	Good	Fair	Fair
Satisfaction with enforcement of seed regulations	Score-out of 100%	47	33	73	55	51
	Interpretation	Fair	Poor	Good	Fair	Fair

11.4.2 Adequacy of seed inspection services

SENASEM employs 105 seed inspectors in the four regions. The Eastern Region has 33 inspectors (31% of the total). However, seed producers are not satisfied with the quality of seed inspection services, rating it "fair" (47%) (Table 59). The chief complaint cited by seed producers in the region is that they are expected to cover the transport costs of the inspectors from SENASEM.

Table 59: Number and satisfaction ratings for adequacy of seed inspectors

Seed inspection services	East	West	South	North	Total
	Kivus	Kongo Central	Katanga	Ubangis, Mongala, Equateur	
Number of seed public inspectors	33	59	7	6	105
% of seed inspections	31%	56%	7%	6%	100%
Minimum satisfaction rating	0	60	0	0	20
Average satisfaction rating (out of 100%)	47	75	50	50	56
Maximum satisfaction rating	90	90	80	50	75

11.4.3 Efforts to stamp out fake seed

The challenge of fake seed is a major problem in the DRC. In 2016, a total of 185 cases of fake seed were reported. Most of these cases (133) were reported in the Eastern Region. Seed producers are highly dissatisfied with the government's efforts to address the problem of fake seed, rating the efforts as "extremely poor" (19%) (Table 60). One of the main drivers of fake seed in the region is the relief market. According to multiple sources, agents who respond to tenders for seed from NGOs usually buy grain, which they sell as seed.

Table 60: Satisfaction with efforts to stamp of fake seed

	East	West	South	North	Total
	Kivu	Kongo Central	Katanga	Ubangui Mongala, Equateur	
How many cases of fake seed did you counter in 2016?	133	11	40	1	185
Average satisfaction rating	19%	0%	3%	0%	22%
Interpretation	Extremely poor	Extremely poor	Extremely poor	Extremely poor	Extremely poor

11.5 INSTITUTIONAL SUPPORT – EASTERN REGION

11.5.1 Quality of seed trade associations

Most of the seed producers in the Eastern Region are aware of either the national or the two provincial seed associations—Union Nationale de Productuers de Semences du Congo (UNAPSCO) in North Kivu and the Association de Productuer de Distributeurs d' Intrants Agricoles du Congo (APDIAC) in South Kivu. As Table 61 shows, more seed producers are aware of UNAPSCO and APDIAC (29 out of 44) than the national association (7 out of 44), but only three of them are members of the national seed association. However, most of the producers (23 out of the 29 who are aware) are members of the provincial seed association in this region.

Table 61: Awareness and membership to National and Provincial seed associations

Seed association indicators		Eastern Region	Southern Region	Western Region	Northern Region	Total
Awareness of seed association (No.)	National	7	3	0	0	10
	Provincial	29	10	11	2	52
Membership to seed association (No.)	National	3	3	0	0	6
	Provincial	23	8	3	0	34

Seed producers in the Southern Region reported low satisfaction levels with both associations. Their overall satisfaction is "fair" (44%) with the national association and "poor" (39%) of the regional association. Their ratings for the different service areas are similar for the national and provincial level, ranging from "poor" and "fair" (or, 27-50%). The widest gap between the ratings of the national vs provincial associations is in level of activity on important seed sector issues: in contrast to the overall ratings, in this case the provincial association is rated more highly (46%) than the national association (27%). (See Figure 4 for details on satisfaction levels with the national and provincial associations.)

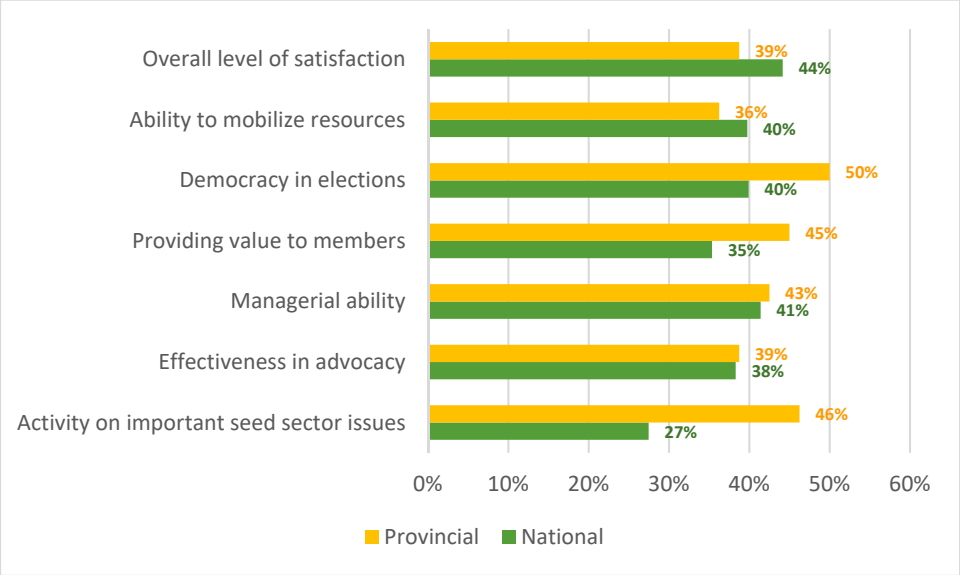

Figure 4: Members' satisfaction with provincial and national seed associations (East)

11.5.2 Availability of extension services

Most of the agricultural extension workers (92%) in the DRC work in the Eastern Region. The region has 994 government extension workers, under the National Extension Service (SNV), and 105 private extension workers, employed by seed companies, NGOs, and other private organizations (Table 62). Despite the high number of extension officers in the Eastern Region, seed producers' satisfaction with the availability of extension workers is only "fair," although the gap is significant between government vs. private extension officers (40% vs. 58%). The lower rating assigned to government workers is due to the fact that they are not sufficiently equipped to perform their functions.

Table 62: Extension workers, by gender and by region

Indicators		Eastern Region	Southern Region	Western Region	Northern Region	Total
# of extension workers	Government	994	0	0	0	994
	Private/ NGO	105	9	90	6	210
	Total	1,099	9	90	6	1,204
% of total		91.3%	0.7%	7.5%	0.5%	

11.6 SERVICE TO SMALLHOLDER FARMERS - EASTERN REGION

11.6.1 Concentration of agro-dealer network

Agro-dealers are a new concept in DRC, introduced in the last five years under the PASA project in eastern part of the DRC. Prior to the introduction of agro-dealers, agro-input merchants, who lacked business and marketing knowledge, stocked agricultural inputs, mainly vegetable seeds, and occasionally small quantities of fertilizer.

As Table 63 shows, the Eastern Region has the highest number of agro-dealers (199 out of 279). These numbers translate to an agro-dealer:farmer ratio of 1:8,610, which is inadequate to properly address the needs of all farmers in the region. In addition, most agro-dealers are not trained and have little knowledge about agro-inputs. For all these reasons, seed producers' satisfaction with agro-dealers in the region is "poor" (33%).

Table 63: Concentration of agro-dealer network, by region

Indicator	East	South	West	North	Total
Number of hub agro-dealers	-	23	2	0	42
Number of rural agro-dealers	-	55	0	0	117
Total number of agro-dealer	199	78	2	0	279
Number of agriculture households	1,713,495	1,680,734	2,454,332	1,216,342	7,064,903
Ratio of agro-dealers to agriculture households	1:8,610	1:21,548	0	0	1:25,322
Satisfaction with concentration of agro-dealer network (out of 100%)	33	40			
Interpretation	Poor	Poor			

11.6.2 Seed in small packages

Seed in small packages gives smallholder farmers who cannot afford to buy large quantities access to more —and presumably, better—varieties. As Table 64 shows, seed in small packages was only sold in the Eastern and Southern regions, because most of the seed companies are based in these regions. Notably, the seed companies in the east have received training on marketing, packaging, and branding of seeds through the PASA project. In Kivu, the percentage of seed sold in small packages was 58% for maize, 37%

for rice, 32% for beans, and 70% for soya beans. Seed producers and agro dealers in the region reported a satisfaction level of "good" with the availability of seed in small packages.

Table 64: Availability of seed in small packages

		Maize	Rice	Beans	Soya beans
East (North and South Kivu)	% seed sold in size of 2kg or less	58%	37%	32%	70%
	Satisfaction with availability of seed in small packages	66	55	55	65
South (Katanga)	% seed sold in size of 2kg or less	14%	0%	8%	0%
	Satisfaction with availability of seed in small packages	55	-	70	-
West (Kongo Central)	% seed sold in size of 2kg or less	-	-	-	-
	Satisfaction with availability of seed in small packages	-	-	-	-
North (Mongala, Ubangis, Equateur)	% seed sold in size of 2kg or less	-	-	-	-
	Satisfaction with availability of seed in small packages	-	-	-	-
Overall	% seed sold in size of 2kg or less	28%	26%	31%	55%

11.6.3 Seed-to-grain price ratio

The seed-to-grain price ratios in the Eastern Region of 2.2:1 for OPV maize and 4.0:1 for hybrid maize were lower than the ratios at the national level, which were for 5.0:1 for OPV maize and 5.5:1 for hybrid maize (Table 65). This is likely due to the influence of the relief market, which purchases maize seed at a low market price. The ratios for the other crops are fairly similar to the national average.

Table 65: Seed-to-grain price ratios for various crops

Regions	Seed-to-grain price ratios in DRC				
	Maize OPV	Maize Hybrid	Rice	Beans	Soya beans
East	2.2:1	4.0:1	1.8:1	2.0:1	2.3:1
South	9.2:1	16.6:1	1.3:1	1.1:1	1.1:1
West	-	2.5:1	2.5:1	1.6:1	2.0:1
Northern	6:1		7.6:1	1.4:1	2.0:1
National	5:1	5.5:1	1.8:1	1.4:1	1.6:1

12 NORTHERN REGION

12.1 INTRODUCTION

The Northern Region covers the former district of Équatuer, which now consists of five provinces. The study covered the four of these provinces – Sub Ubangi, Nord Ubangi, Equatuer and Mongala. The combined area of these four provinces is 270,335 km^2, and the total combined population is 7,646,585.

12.2 RESEARCH AND DEVELOPMENT – NORTHERN REGION

Number of varieties sold

Between 2014 and 2016, only five out of the 89 varieties were sold in the Northern Region. This is because the region has the lowest number of seed producers. By crop, two were maize varieties, and three were rice varieties, and no bean or soya bean varieties were sold in the regions during this period. Table 66 shows that, across the four crops, many varieties available in other regions of the DRC are not sold in this region.

Table 66: Number of varieties sold in the last three years, by region

CROP	East	South	West	North	Total[10]
	North and South Kivu	Katanga	Kongo Central	Sud/Nord Ubangi, Mongala, Equatuer	
Maize	19	18	12	2	41
Rice	15	2	9	3	20
Beans	15	2	0	0	16
Soya beans	7	5	3	0	12
Total	**56**	**27**	**24**	**5**	**89**

12.3 INDUSTRY COMPETITIVENESS – NORTHERN REGION

12.3.1 Number of active seed producers

Only 6 of the total 73 seed producers were located in the north. The producers are either seed associations or individual seed producers; no seed companies are in this region. Table 67 offers a comparative look at the numbers and types of seed producers in the various regions.

[10] Some varieties are sold in more than one region

Table 67: Number of seed producers by region

Region	Category of seed producers				Producers in each region as % of total producers (73)
	Seed companies	Seed associations	Individual seed producers	Total	
East	7	14	23	44	60%
South	4	5	1	10	14%
West	0	2	11	13	18%
North	0	4	2	6	8%
TOTAL	11	25	37	73	

Among the 73 seed producers surveyed in the DRC in 2016, 89% produce maize, 57% produce rice, 44% produce beans, and 44% produce soya beans (Table 68). As Table 68 clearly shows, the Northern Region is home to only 11% of maize seed producers, 16% of rice seed producers, and 7% of the soya bean seed producers in the country. The region has no bean seed producers.

Table 68: Breakdown of seed producers in DRC by crop

Region	Crops			
	Maize	Rice	Beans	Soya beans
East (North and South Kivu)	32	20	24	21
South (Katanga)	6	2	4	5
West (Kongo Central)	12	8	0	0[11]
North (Ubangi, Mongala, Equatuer)	6	6	0	2
TOTAL	56	36	28	28
Producers in Northern Region as % of total # of producers by crop	11%	16%	0%	7%

12.3.2 Market size – Northern Region

Due to the small number of seed producers, the Northern Region produced the smallest amount of seed for all crops: 3% of the maize seed, 4% of the rice seed, 3% of the soya bean seed, and no bean seed. Due to the small number of producers, the level of market competition is low. The market share of the top four seed producers in this region is 99% for maize, 89% for rice, and 100% for soya beans. However, it is important to view these figures in the context of overall volumes produced, which are very low. Table 69 outlines the market share and overall size of the market in the Northern Region.

[11] One agro-dealer imports and sells soya bean seed as an agent of a foreign seed company; not counted as a seed producer.

Table 69: Market share and size, Northern Region

Market share variables	Maize	Rice	Beans	Soya beans	Total
Eastern Region sales (tons)	562	309	315	193	1,379
Southern Region sales (tons)	940	6	16	45	1,007
Western Region sales (tons)	248	97	0	2	347
Northern Region sales (tons)	56	19	0	4	79
DRC total seed sales (tons)	1,806	430	331	244	2,813
Norther region % of overall DRC market	3%	4%	0%	2%	
Market size of top four producers	56	17	0	4	77
Market Share of top four producers (%)	99%	89%	0%	100%	97%

12.3.3 Relief market

Seed producers from the Northern Region are not major suppliers of seed to the relief market, accounting for only 4% of maize seed, 1% of rice seed, and 0.12% of soya bean seed. That said, due to the low overall volumes of production and sales, relief sales account for a sizable portion of total seed sales in the region for maize (28%) and rice (13%). Soya bean sales to the relief market only account for 3% of total. (See Table 70 for details on sales to the relief market.)

Table 70: Seed sales to the relief market, from the Northern Region

Region	Provinces	Seed sales to relief market				
		Maize	Rice	Beans	Soya beans	Total
East	North Kivu, South Kivu	353.2	163.9	239.5	101.1	857.8
South	Katanga	1.0	0.0	0.3	0.0	1.3
West	Kongo Central	36.4	5.98	0.0	0.0	42.38
North	Equatuer, Ubangis, Mungala	15.76	2.4	0.0	0.126	18.3
Total sales to relief market		406.4	172.3	239.8	101.3	919.8
Relief sales (Northern Region), as % of total sales (relief market)		4%	1%	0%	0.12%	
Relief sales (Northern Region), as % of total sales (Northern Region)		28%	13%	0%	3%	

12.3.4 Seed imports – Northern Region

In 2016, no formal or informal seed imports were recorded into the Northern Region.

12.4 SEED POLICY AND REGULATION – NORTHERN REGION

12.4.1 Quality and enforcement of seed regulations

As Table 71 highlights, the seed producers in the north rated the quality of the seed regulations as "fair" (50%). This is similar to the national average of 58%, as well as the ratings in the Eastern and Southern Regions. In addition, the producers rated the quality of enforcement as "fair" (55%), similarly to the national average of 51%. Despite the relatively high scores, seed producers in the Northern Region felt that they lacked sufficient knowledge of the seed policy instruments. In addition, with few located near SENASEM offices, most producers experienced difficulties in accessing various seed services.

Table 71: Satisfaction with quality and enforcement of seed regulations

Policy indicator		East	South	West	North	National
		North and South Kivu	Katanga, Lualaba	Kongo Central, Kinshasa	Sud/Nord Ubangi, Mongala, Equatuer	
Satisfaction with quality of seed regulations	Score-out of 100%	58	45	68	50	58
	Interpretation	Fair	Fair	Good	Fair	Fair
Satisfaction with enforcement of seed regulations	Score-out of 100%	47	33	73	55	51
	Interpretation	Fair	Poor	Good	Fair	Fair

12.4.2 Adequacy of seed inspection services

SENASEM employs 105 seed inspectors in the four regions. The Northern Region has only 6 inspectors, the smallest number of the four regions surveyed. This is consistent with the other findings noted above, namely that the region has the lowest number of seed producers and the lowest volumes of seed produced, among the four regions. Unfortunately, this translates to low quality seed services. That said, seed producers in the region rated the adequacy of seed inspectors as "fair" (50%), just below the national average of 56% (Table 72).

Table 72: Number and satisfaction ratings for adequacy of seed inspectors

Seed inspection services	East	West	South	North	Total
	N. and S. Kivu	Kongo Central	Katanga	Ubangis, Mongala, Equateur	
Number of seed public inspectors	33	59	7	6	105
% of seed inspections	31%	56%	7%	6%	100%
Minimum satisfaction rating	0	60	0	0	20
Average satisfaction rating (out of 100%)	47	75	50	50	56
Maximum satisfaction rating	90	90	80	50	75

12.4.3 Efforts to stamp out fake seed

The challenge of fake seed is a major problem in the DRC. In 2016, a total of 185 cases of fake seed were reported in the country. However, only one case was reported in the Northern Region. This may be largely due to the low levels of seed production and marketing in this region, compared with the other three regions. Nevertheless, seed producers rated their government's efforts to address the challenge of fake seed as "extremely poor" (0%) (Table 73).

Table 73: Satisfaction ratings with efforts to stamp out fake seed

	East	West	South	North	Total
	Kivu	Kongo Central	Katanga	Ubangui Mongala, Equateur	
How many cases of fake seed did you counter in 2016?	133	11	40	1	185
Average satisfaction rating	1.9	0	0.3	0	2.2
Interpretation	Extremely poor	Extremely poor	Extremely poor	Extremely poor	Extremely poor

12.5 INSTITUTIONAL SUPPORT – NORTHERN REGION

12.5.1 Quality of seed trade associations

As Table 74 shows, none of the seed producers in the Northern Region was aware of the existence of a national seed association in the DRC. This shows the relative exclusion of seed producers in this region from the national scene. In addition, only two of the six seed producers in the region were aware of the provincial seed association, and none of them was a member.

Table 74: Awareness and membership to National and Provincial Seed Associations

Seed association indicators		Eastern Region	Southern Region	Western Region	Northern Region	Total
Awareness of seed association (No.)	National	7	3	0	0	10
	Provincial	29	10	11	2	52
Membership to seed association (No.)	National	3	3	0	0	6
	Provincial	23	8	3	0	34

12.5.2 Availability of extension services

The Northern Region does not have any private or public extension services.

12.6 SERVICE TO SMALLHOLDER FARMERS – NORTHERN REGION

12.6.1 Concentration of Agro-dealer network

There are no known agro-dealers in the Northern Region.

12.6.2 Seed-to-grain price ratio

The seed-to-grain price ratios for the four crops in the Northern Region were higher than those at the national level. As Table 75 shows, the ratios are 6:1 (maize OPV), 7.6:1 (rice), 1.4:1 (beans) and 2.0:1 (soya beans), compared to the national ratios of 5:1 (maize OPV), 1.8:1 (rice), 1.4:1 (beans) and 1.6:1 (soya beans)[12]. In 2016, there were no sales of hybrid maize in the Northern Region. The higher ratios are mainly due to the low price of grain in the Northern Region. The price of grain in the Northern Region is lower than the national average. In addition, the price of grain is the lowest for maize OPV (USD 0.3 per kg), rice (USD 0.2 per kg), and second lowest for beans (USD 1.4 per kg) and soya beans (USD 1 per kg), among the four regions.

Table 75: Seed-to-grain price ratio, by region

Regions	Seed-to-grain price ratios in DRC				
	Maize OPV	Maize Hybrid	Rice	Beans	Soya beans
East	2.2:1	4.0:1	1.8:1	2.0:1	2.3:1
South	9.2:1	16.6:1	1.3:1	1.1:1	1.1:1
West	-	2.5:1	2.5:1	1.6:1	2.0:1
North	6:1		7.6:1	1.4:1	2.0:1
National	5:1	5.5:1	1.8:1	1.4:1	1.6:1

[12] A detailed breakdown of the prices and ratios is in Appendix 3

13 WESTERN REGION

13.1 INTRODUCTION

The Western Region covers four provinces – Kinshasa, Kongo-Central, Kwilu and Kwango. The combined area of these four provinces is 232,078 km^2, and the total combined population is 23,546,696.

13.2 RESEARCH AND DEVELOPMENT- WESTERN REGION

13.2.1 Number of varieties sold

Between 2014 and 2016, a total of 24 out of the 89 varieties of the four crops were sold in the Western Region. By crop, 12 out of 41 maize varieties, nine out of 20 rice varieties, three out of 12 soya bean varieties, and no bean varieties were sold in the region during this period. Table 76 shows that, across the four crops, many varieties available in other regions of the DRC are not sold in this region.

Table 76: Number of varieties sold to farmers, by region

CROP	Number of varieties sold to farmers (2014-2016)				
	East	South	West	North	Total[13]
Maize	19	18	12	2	41
Rice	15	2	9	3	20
Beans	15	2	0	0	16
Soya beans	7	5	3	0	12
Total	**56**	**27**	**24**	**5**	**89**

13.2.2 Availability of foundation seed

Seed producers in the Western Region access foundation seed from INERA and UNILU. They rate their satisfaction with the availability of foundation seed as “fair” for maize (50%), and “good” for rice (63%), and soya beans (60%). See Table 77 for data on the availability of foundation seed.

[13] Some varieties are sold in more than one region

Table 77: Availability of foundation seed

Region	Provinces	Satisfaction (out of 100%)				
		Maize	Rice	Beans	Soya beans	Overall
East	North & South Kivu	68	61	68	60	64
South	Katanga, Lualaba	76	50	58	65	62
West	Kongo Central, Kwilu, Kinshasa	50	63	-	60	58
		fair	good		good	good
North	Ubangis, Mongala, Equatuer	67	68	-	-	68
Overall		65	61	63	62	

13.3 INDUSTRY COMPETITIVENESS – WESTERN REGION

13.3.1 Number of active seed producers

As Table 78 shows, only 13 of the total of 73 seed producers are located in the Western Region. Of these, two are seed associations and 11 are individual seed producers; no seed companies are based in this region. However, two agro-dealers in the region also import seed, and one commercial farmer is active in the seed business.

Table 78: Number of seed producers in the DRC, by region

Region	Category of seed producers			
	Seed companies	Seed associations	Individual seed producers	Total
East	7	14	23	44
South	4	5	1	10
West	0	2	11	13
North	0	4	2	6
TOTAL	11	25	37	73

The seed producers in the Western Region account for about one fifth of the seed producers for maize seed (21%) and rice seed (22%). There are no producers of bean seed or soya bean seed in this region. Soya bean seed in this region is imported by an agro-dealer and sold to farmers directly.

Table 79: Breakdown of seed producers, by region

Region	Number of seed producer, by crop			
	Maize	Rice	Beans	Soya beans
East (North and South Kivu)	32	20	24	21
South (Katanga, Lualaba)	6	2	4	5
West (Kongo Central, Kinshasa, Kwilu)	12	8	0	0[14]
North (Ubangis, Mongala, Equatuer)	6	6	0	2
TOTAL	56	36	28	28
Producers in Western Region as % of total # of producers by crop	21%	22%	0%	0%

13.3.2 Market size

In DRC in 2016, the west accounted for 14% of national maize seed sales, 22% of national rice seed sales, but only 0.8% of national soya bean seed sales (Table 80). The sales proportions are directly correlated to the number of seed producers in the region, for each crop. Further, the level of competitiveness mirrors the number of seed producers in the region. The top four (out of 12 maize producers in the region) account for 47% of the market. This is an indicator of healthy competition as none of the seed producers is a dominant player. On the other hand, the top four rice producers (out of 8 in the region) account for 82% of the rice seed sales. Since there is only one soya bean seed seller in the region, the competition is very low, as the market is a perfect monopoly.

Table 80: Market share and market size

Market share variables	Maize	Rice	Beans	Soya beans	Total
Eastern Region sales (tons)	562	309	315	193	1,379
Southern Region sales (tons)	940	6	16	45	1,007
Western Region sales (tons)	248	97	0	2	347
Northern Region sales (tons)	56	19	0	4	79
DRC total seed sales (tons)	1,806	430	331	244	2,813
Sales (west) as % of overall DRC sales	14%	22%	0%	0.8%	
Market share (west) of top four producers (%)	47%	82%	-	100%	

[14] One agro-dealer imports and sells soya bean seed, as an agent of a foreign seed company. Not counted as a seed producer.

13.3.3 Relief market

Seed producers from the Western Region are not major suppliers of seed to the relief market. Seed sales from this region are very low – 9% for maize seed and 3.5% of rice seed. There are no sales to the relief market for bean seed or soya bean seed (Table 81).

Table 81: Seed sales to the relief market

Region	Provinces	Seed sales to relief market				
		Maize	Rice	Beans	Soya beans	Total
East	North Kivu, South Kivu	353	164	240	101	858
South	Katanga, Lualaba	1	0	0	0	1
West	Kongo Central, Kwilu, Kinshasa	36	6	0	0	42
North	Equatuer, Ubangis, Mungala	16	2	0	0	18
Total sales to relief market		406	406	172	240	101
Relief sales (Western Region), as % of total sales (relief market)		9%	3.5%	0%	0%	

13.3.4 Seed imports

13.3.4.1 Formal seed imports

The time it takes to formally import seed is calculated as the number of days from the time an import permit is requested to the time when the seed is cleared at the border. There were notable difficulties trying to access this data from seed producers and other actors. As shown in Table 82, in 2016, about 3,362 tons of seeds was formally imported in 2016 in DRC. Of this amount, 1,876 tons (56%) were formally imported into the Western Region. The imports were for maize seed, rice seed and soya bean seed. The border points of entry were Boma (sea port), Matadi (the main sea port), Kasumbalesa (border with Zambia), and the Kinshasa airport. The main importers were the government (INERA and the National Quarantine Service, under the Ministry of Agriculture), seed producers and agro-dealers. By country, the main sources of imports were from South Africa and Zambia, with smaller amounts from Rwanda, Nigeria, Thailand, and Zimbabwe.

On average, the total length of the formal import process in the Western Region is 20 days, which is marginally higher than the national average of 16 days. Despite this fact, seed importers in this region are fairly satisfied with the import process, rating it “fair” (50%) and significantly higher than the national average of 20%.

Table 82: Formal seed imports into DRC

Import indicators	East	West	South	Total
Crops imported	Maize, soya beans	Maize, soya beans, rice	Maize, soya beans,	
Exporting country	Kenya, Rwanda, Uganda, Zambia	Zambia, South Africa, Rwanda, Nigeria, Zimbabwe	Zambia, South Africa	
Border points	Bunagana, Kasindi, Ruzizi	Boma, Kinshasa airport, Kasumbalesa, Matadi	Kasumbalesa, Luana	
Importers	Seed producers, INERA	INERA, seed producers, Ministry of Agriculture, CIAT	INERA, Seed producers, commercial farmers	
Imports (in tons)	79	1,876	1,406	3,362
Import time (days)	5	20	17	16
Satisfaction with import process	10%	50%	30%	20%

13.3.4.2 Informal imports of certified seed in 2016

Informal imports are not officially documented; nevertheless, the TASAI survey collected available data on informal imports. No informal seed imports were recorded in the Western Region in 2016.

13.4 SEED POLICY AND REGULATION – WESTERN REGION

13.4.1 Quality and enforcement of seed regulations

Table 83 shows that seed producers in the Western Region rated the quality of the seed regulations as "good" (68%). This is the highest rating among the four regions, and higher than the national average of 58%. In addition, the producers rated the quality of enforcement as good (73%), which is notably higher than the ratings from all other regions and higher than the national average of 51%. The high rating is partly due to the proximity of the seed producers to the main government offices in the region, based in the capital city of Kinshasa.

Table 83: Satisfaction with enforcement of seed regulations

Policy indicator		East	South	West	North	National
		North and South Kivu	Katanga, Lualaba	Kongo Central, Kinshasa	Sud/Nord Ubangi, Mongala, Equatuer	
Satisfaction with quality of seed regulations	Score-out of 100%	58	45	68	50	58
	Interpretation	Fair	Fair	Good	Fair	Fair
Satisfaction with enforcement of seed regulations	Score-out of 100%	47	33	73	55	51
	Interpretation	Fair	Poor	Good	Fair	Fair

13.4.2 Adequacy of seed inspection services

Of the total of 105 seed inspectors employed by SENASEM nationally, 59 (56%) are based in the Western region, even though it accounts for only 14% of the national seed sales (Table 84). Perhaps not surprisingly, the seed producers in the region are the most satisfied in the country, rating the adequacy of inspectors as "good" (75%), considerably higher than the national average of 56% and higher than any other region. The favorable opinion regarding seed inspection services is partly because SENASEM offices in the region (particularly the Kongo Central province) receive additional support through the PDPC project.

Table 84: Number and satisfaction ratings for adequacy of seed inspectors

Seed inspection services	East	West	South	North	Total
Number of seed public inspectors	33	59	7	6	105
% of seed inspections	31%	56%	7%	6%	100%
Average satisfaction rating (out of 100%)	47	75	50	50	56
Interpretation	Fair	Good	Fair	Fair	Fair

13.4.3 Efforts to stamp out fake seed

The challenge of fake seed is a major problem in the DRC. In 2016, a total of 185 cases of fake seed were reported. However, only 11 of these cases were reported in the Western Region. Despite the low number of reports, seed producers are highly dissatisfied with the government's efforts to address the problem of fake seed, rating the efforts as "extremely poor" (0%) (Table 85).

Table 85: satisfaction with efforts to stamp out fake seed

	East	West	South	North	Total
	Kivu	Kongo Central	Katanga	Ubangui Mongala, Equateur	

How many cases of fake seed did you counter in 2016?	133	11	40	1	185
Average satisfaction rating	19%	0%	3%	0%	22%
Interpretation	Extremely poor	Extremely poor	Extremely poor	Extremely poor	Extremely poor

13.5 INSTITUTIONAL SUPPORT – WESTERN REGION

13.5.1 Quality of seed trade associations

None of the seed producers in the Western Region are aware of the existence of the national seed association (Table 86). However, most of them (11 out of 13) reported knowledge of the provincial seed association. Despite this awareness, only 3 are members of the provincial seed association.

Table 86: Awareness and membership to national and provincial seed associations

Seed association indicators		Eastern Region	Southern Region	Western Region	Northern Region	Total
Awareness of seed association (No.)	National	7	3	0	0	10
	Provincial	29	10	11	2	52
Membership to seed association (No.)	National	3	3	0	0	6
	Provincial	23	8	3	0	34

Seed producers' in the Western Region are satisfied with the provincial seed associations, rating it "good" overall (70%). However, as Figure 6 shows, the ratings for the different service areas vary widely. For example, the provincial association is rated "excellent" in democracy and elections (90%) and in providing value to members (80%), and "good" in all the other service areas, including ability to mobilize resources (65%), managerial ability (75%), effectiveness in advocacy (60%) and activity on important seed sector issues (60%).

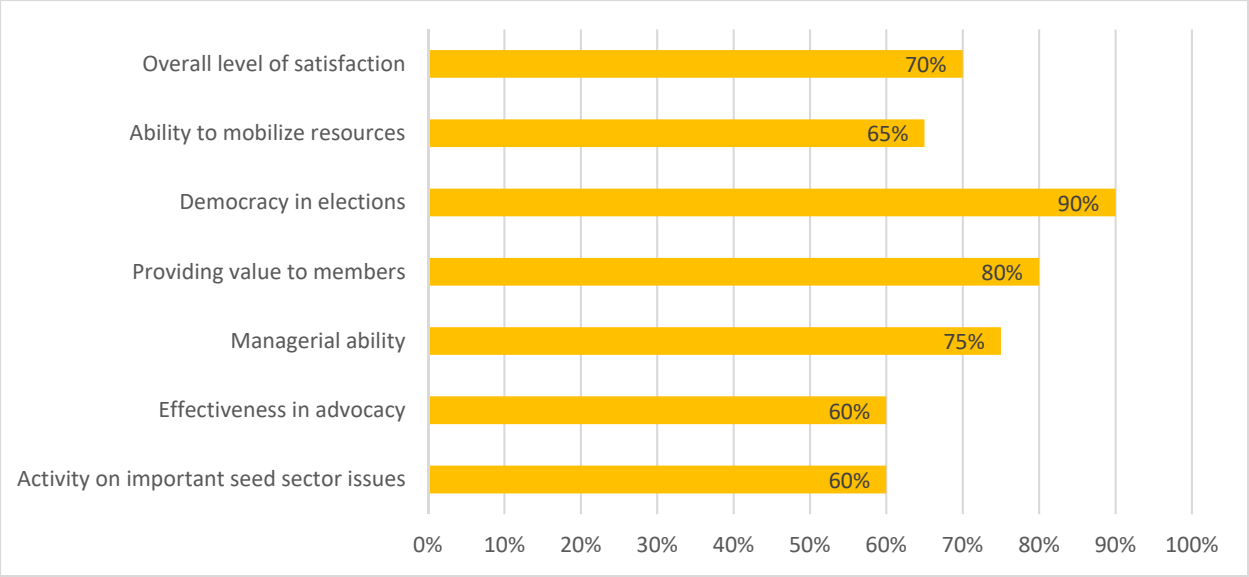

Figure 3: Members' satisfaction with provincial and national seed associations (West)

13.5.2 Availability of extension services

The region has 90 extension workers, all of whom are employed by the private sector and NGOs. The public national extension service (SNV) does not have any extension workers in the Western Region. Seed producers rate the availability of extension workers in this region as "fair" (50%).

Table 87: Number of agricultural extension workers in the DRC

Indicators		Eastern Region	Southern Region	Western Region	Northern Region	Total
# of extension workers	Government	994	0	0	0	994
	Private/ NGO	105	9	90	0	204
	Total	1,099	9	90	0	1,198
% of total		92%	0.8%	8%	0%	

13.6 SERVICE TO SMALLHOLDER FARMERS- WESTERN REGION

13.6.1 Concentration of Agro-dealer network

Agro-dealers are a new concept in the DRC, introduced only in the last five years under the PASA project. However, most agro-dealers are located in the Eastern and Southern Regions; at present, the Western Region has only two agro-dealers, signaling an acute shortage of providers in the region. See Table 88 for the number of agro-dealers and relevant statistics per region.

Table 88: Concentration of agro-dealer network, by region

Indicator	East	South	West	North	Total
Number of hub agro-dealers	-	23	2	0	42
Number of rural agro-dealers	-	55	0	0	117
Total number of agro-dealer	199	78	2	0	279
Number of agriculture households	1,713,495	1,680,734	2,454,332	1,216,342	7,064,903
Ratio of agro-dealers to agriculture households	1:8,610	1:21,548	0	0	1:25,322
Satisfaction with concentration of agro-dealer network (out of 100%)	33	40			
Interpretation	Poor	Poor			

13.6.2 Seed-to-grain price ratio

The seed-to-grain price ratio for hybrid maize in the Western Region was the lowest ratio among all the regions: (2.5:1) and were lower than the national average of 5.5:1 for hybrid maize and 5.0:1 for OPV maize (Table 89). However, ratios for rice (2.5:1), bean (1.6:1), and soya bean (2.0:1) seed were mostly similar to the ratios for other regions. By comparison, the ratios on the national level were 1.8:1 (rice), 1.4:1 (beans) and 1.6:1 (soya beans).

Table 89: Seed-to-grain price ratios

Regions	Seed-to-grain price ratios in DRC				
	Maize OPV	Maize Hybrid	Rice	Beans	Soya beans
East	2.2:1	4.0:1	1.8:1	2.0:1	2.3:1
South	9.2:1	16.6:1	1.3:1	1.1:1	1.1:1
West	-	2.5:1	2.5:1	1.6:1	2.0:1
North	6:1		7.6:1	1.4:1	2.0:1
National	5:1	5.5:1	1.8:1	1.4:1	1.6:1

14 CONCLUSION AND RECOMMENDATIONS

14.1 RECOMMENDATIONS

14.1.1 Research and Development

a. More investment in variety development: The DRC has only eighteen active plant breeders, and most of them are not well-supported. There is an urgent need to increase investment in crop breeding programs at the public institutions—UNILU and INERA—to improve the quantity and quality of varieties for the four focus crops and to complement these efforts by greater collaboration with international agricultural research institutions like CIMMYT (maize), Africa Rice (rice), IITA (beans and soya beans). In addition, INERA and UNILU should collaborate with domestic agricultural research programs to increase the local pool of breeding material. Further, INERA and UNILU may benefit from working with Quali Basic Seed Company, a newly-formed private enterprise in Kenya, which produces and sells foundation seed across East Africa.
b. Improve access to varieties across the regions: As seen above, many varieties are sold in some regions of the country but not others. Seed producers, agro-dealers or other channels should be encouraged and supported to make more varieties available in their respective regions.

14.1.2 Industry Competitiveness

a. Strengthen local seed producers: In an effort to professionalize the operations of local seed producers, they should be strengthened in all areas, including quality control in seed production and seed marketing. In addition, seed producer associations should be encouraged to turn their operations into formal business entities.
b. Collaboration with foreign seed companies: Local seed companies should be supported to enter into business agreements with foreign seed companies, especially those that are already exporting seed into the country. Such joint business models can offer a way to create sustainable and professional seed enterprises in the country that produce high-quality seed. Such collaboration can also bring much-needed expertise in breeding and seed production into the country.
c. Oversight of the relief market: The relief market, in its current form, is bolstering the informal seed economy and the proliferation of fake seed. The operations of organizations involved in the relief seed market need greater oversight to promote trade in genuine seed (as opposed to grain), thus indirectly contributing to market development for quality seed in the country.

14.1.3 Seed policy and regulation

a. Fast-track approval of the DRC seed policy: The purpose of the seed policy is to provide the overall strategic guidance for the DRC seed industry. Thus, cabinet should review the draft seed policy to ensure that it is comprehensive and relevant and procced to approval the instrument as soon as possible.
b. Fast-track the harmonization of the DRC seed regulations with COMESA seed regulations: COMESA seed regulations provide a framework for COMESA member states to import seed varieties from

member states as long as they are registered on the COMESA catalogue. Given that relatively few varieties are available in the DRC, seed producers and breeders would benefit from accessing more varieties of quality seed for multiplication and sale.

c. Develop a national seed strategy: Unlike other countries in the region, the DRC does not have a national seed strategy or plan. Government should bring together key seed sector stakeholders to formulate a national strategy to guide the development of the seed industry. Importantly, the national strategy should also include information specific to regions (provinces), because the regions have notable differences and comparative advantages.
d. Greater funding and support to SENASEM: SENASEM is presently under-funded. Lacking sufficient staff, the organization is unable to regulate the seed industry effectively. SENASEM needs to be supported directly through increased funding, and/or indirectly by collaborating with supporting institutions.
e. Update the national variety catalogue: The national variety catalogue needs to be updated and disseminated widely to ensure that seed producers and farmers are aware of the different varieties available to them;
f. Train and accredit private seed inspectors: Given the magnitude of the problem of fake seed, SENASEM should start a process of training and accrediting private seed inspectors in all regions to complement the existing SENASEM inspectors.
g. Tax imports: The government should waive all taxes on seed imports to encourage more formal trade.

Registration and quality control of seed producers: SENASEM needs to develop a registry of all seed producers in the country to increase oversight of seed producers and to ensure that their production meets the quality standards of the industry. This is best done at the provincial level.

14.1.4 Institutional Support

a. Strengthen seed producer associations: There is a need for greater awareness of seed producer associations among the seed producers. The associations need to be professionalized and supported to develop into an effective platform for seed sector development. The best strategy may be to strengthen provincial associations, as these can serve as a member base for the national seed association. Thus, provincial associations should lead the formulation and implementation of the provincial seed sector strategies.
b. Strengthen the national extension service (SNV) with sufficiently well-trained staff at the provincial levels. In addition, SNV should work closely with extension staff from private agribusiness enterprises to increase their outreach to farmers.

14.1.5 Service to small-holder farmers

a. Strengthen the agro-dealer networks: Agro-dealer networks across the country are weak or non-existent. The country needs more hub and rural agro-dealerships with well trained and accredited agro-dealers.

14.2 CONCLUSIONS

The seed industry in the DRC is in the introductory stage. The low adoption rates (less than 50%) of certified seed for key food crops and the very low volumes of seed sales suggest that there is significant space for growth. However, seed sector growth is constrained by several factors across the seed value chain. Further, the opportunities and challenges in the sector notably vary – in some cases – across the four regions.

At the research level, the country needs more breeders at INERA and the University of Lubumbashi. More importantly, the breeders need more resources to carry out their work. This is important, as the average age of the varieties surveyed in the DRC is the oldest recorded in East and Southern Africa. Old varieties that no longer display the original variety characteristics need to be replaced with newer varieties.

At the industry level, the local seed companies need support to build their capacity in seed production, management, and marketing. This could be achieved through partnerships with more established seed companies from neighbouring countries. All categories of seed producers, especially the individual seed producers and seed associations, need to be more effectively monitored and regulated to ensure quality output of certified seed.

There is an urgent need for greater quality control in the relief seed market to avoid the distortion of the local seed market. For their part, seed producers need to ensure the supply of quality seed, while the relief agencies should offer more competitive prices.

Most of the seed policy instruments in the DRC, including the seed law and regulations, have been in draft form for nearly 10 years. Policy makers should ensure that these instruments are updated to conform to the COMESA harmonized seed regulations before they are passed by the relevant authorities. In addition, supporting instruments such as the national Variety Catalogue need to be updated more regularly. The weak capacity of SENASEM significantly affects various aspects of the seed sector including seed quality control and inspection services at the production, post-production and distribution stages.

Lastly, the various seed support services are either notably weak or non-existent. There are very few agro-dealers and extension officers in the country. In most cases, these supporting agents are insufficiently trained and lack sufficient resources to assist farmers, or they do not even exist, such as in the north. The national and provincial seed associations are generally weak and lack name recognition among seed producers. The associations also need to strengthen their management and service delivery.

While the above challenges constraining seed sector development in the DRC are formidable, the sector has significant potential for growth because of the overall agricultural potential of the country. The fact that regional seed companies have entered the market in the DRC or at least are exploring it via exports, signals an attractive seed market. With new investments in agriculture and concerted reform efforts by government and the private sector, there is a unique window for catalytic change in DRC's formal seed sector.

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16 APPENDICES

16.1 APPENDIX 1: VARIETIES SOLD TO FARMERS (2014-2016)

CROP	East	South	West	North	Total	Names of varieties
	North and South Kivu	Katanga	Kongo Central	Sud/Nord Ubangi, Mongala, Equatuer		
Maize	19	18	12	2	41	Babungo, UNILU, SC627, SC719, PNR53, SC720, SC633, SC634, SC637, Zamseed700, SAM4 VITA, ECAVEL1, ZM627, ZM625, UH5053, BAMBOU, BAZOOKA, DUMA43, LONGE 10H, KASAI1, H629, H628, H627, PNR67, MUDISHI1, MUDISHI3, ZM607, SC117, SC647, SC513, SC608, SC602, 634MRISEED, 624MRISEED, SAMARU, Qpm1, Qpm3, SC727, SC701, SC506, SC403
Rice	15	2	9	3	20	Nerica7,Nerica4, NericaL14, NericaL17, Jasmine, Giza182, Arica2, Hubei 6, IRAT112, Rukaramu, Fashingabo, Tox3154, SIPI, Namweru, Lioto, Nerica1, Nerica3, IRAT13, Namche1, Mayakunya
Beans	15	2	0	0	16	D6 Kenya, PNR148, KABULANGETI, HM21-7, COLDMB001, MAC44, RWV1129, NABE4, RWR2154, RWR2245, NAMULENGE, G59, PIGEON VERT, KAROUGE, KASODA, KADEMAYI
Soya beans	7	5	3	0	12	MRISEED, TGX 125, AFIA, KALEYA, TGX1830-20, HERNON, IMPERIAL, PK6, SB24, SAFARI, SEQUELE, CANADA
Total	56	27	24	5		

16.2 APPENDIX 2: ACTIVE SEED PRODUCERS IN DRC IN 2016

No	Name of seed producer/company	Category of producer			Region				Crop			
		Company	Association	Producers	East (Kivu)	west (Kongo Central)	south (Katanga)	North (Equateur, Ubangis, Mungala)	Maize	Rice	Beans	Soya beans
1.	Individual seed producer	-	-	V	-	-	√	-	√		√	
2.	JRD	-	√	-	-	-	√	-	√	√	√	√
3.	Individual seed producer	-	-	√	-	-	√	-	√		√	√
4.	Individual seed producer	-	-	√	-	-	√	-	√			
5.	Individual seed producer	-	-	√	-	-	√	-	√	√	√	√
6.	Individual seed producer	-	-	√	-	-	√	-				√
7.	SEEDCO DRC	√	-	-	-	-	√	-	√			√
	Total (South – Katanga)	**1**	**1**	**5**					**6**	**2**	**4**	**5**
8.	Maison Muchepe	-	√	-	√	-	-	-	√		√	
9.	AFPDE	-	√	-	√	-	-	-	√	√	√	
10.	AGRIFORCE	√	-	-	√	-	-	-	√	√	√	√
11.	GRADDI Kivu	-	√	-	√	-	-	-			√	√
12.	ARM	-	√	-	√	-	-	-	√		√	
13.	Individual seed producer	-	-	√	√	-	-	-	√	√		√
14.	Individual seed producer	-	-	√	√	-	-	-	√		√	

15.	FONIMIS	-	√	-	√	-	-	-	√	√	√	√
16.	ACPS	-	√	-	√	-	-	-	√			
17.	ADRI Kivu	-	√	-	√	-	-	-	√	√		
18.	Individual seed producer	-	-	√	√	-	-	-	√		√	
19.	Individual seed producer	-	-	√	√	-	-	-	√	√		
20.	ASEEV	-	√	-	√	-	-	-	√			
21.	ITAV/Kasenga	-	√	-	√	-	-	-	√			√
22.	UCOPASUKI	-	√	-	√	-	-	-	√	√		
23.	JOB Seed Company	√	-	-	√	-	-	-	√	√	√	√
24.	Ferme Agroalimentaire et Semenciere du Kivu	√	-	-	√	-	-	-	√	√	√	√
25.	BARAKA Seed Company	√	-	-	√	-	-	-	√	√	√	√
26.	SEMKI Seed Company	√	-	-	√	-	-	-	√	√	√	√
27.	NTH Business	-	√	-	√	-	-	-	√	√	√	√
28.	LOFEPACO	-	√	-	√	-	-	-		√	√	
29.	Individual seed producer	-	-	√	√	-	-	-	√	√	√	V
30.	NASECO1996/TD	√	-	-	√	-	-	-	√			
31.	Dynamique Paysanne Féminine	-	√	-	√	-	-	-			√	√
32.	Ets Buhendwa	√	-	-	√	-	-	-			√	√
33.	COOPADERU	-	√	-	√	-	-	-	√		√	√
34.	CEDERU	-	√	-	√	-	-	-	√	√	√	√
35.	COFADER Kiwanja	-	√	-	√	-	-	-	√		√	√
36.	GADIBU	-	√	-	√	-	-	-	√		√	√

37.	COOPERATIVE UMOJA	-	√	-	√	-	-	-	√			
38.	COOPROVEPA	-	√	-	√	-	-	-	√			
39.	Individual seed producer	-	-	√	√	-	-	-	√			
40.	Individual seed producer	-	-	√	√	-	-	-	√	√	√	√
41.	Individual seed producer	-	-	√	√	-	-	-		√		
42.	Individual seed producer	-	-	√	√	-	-	-	√	√	√	√
43.	ACT for GENDA	-	√	-	√	-	-	-	√	√	√	√
44.	CEPRODEA	-	√	-	√	-	-	-	√	√		√
Sub-total (East – Kivus)									**32**	**20**	**24**	**21**
45.	INDIVIDUALS SEED P	-	-	√	-	-	-	√	√	√		
46.	MEPADE	-	√	-	-	-	-	√	√	√		
47.	INDIVIDUALS SEED P.	-	-	√	-	-	-	√	√	√		
48.	MBIYA	-	✓	-	-	-	-	√	√	✓ √		✓
49.	INDIVIDUALS SEED P.	-	-	√	-	-	-	√	√	✓ √		
50.	INDIVIDUALS SEED P.	-	-	√	-	-	-	√	√	✓ √		✓
Sub-total (North – Equatuer)		**0**	**2**	**4**	**0**	**0**	**0**	**6**	**6**	**6**	**0**	**2**
51.	GRAB	-	✓	-	-	✓	-	-	√	✓ √		
52.	APROFEL	-	✓	-	-	✓	-	-		✓		
53.	UBUMAL	-	✓	-	-	✓	-	-	✓ √	✓		
54.	REPROV	-	✓	-	-	✓	-	-	✓ √	✓		
55.	INDIVIDUALS SEED P.	-	-	V	-	✓	-	-	✓ √	✓		

56.	GAS(YOUTH ASSOCIATION	-	✓	-	-	✓	-	-	✓ √				
57.	APFM	-	✓	-	-	✓	-	-	✓ √				
58.	ADEBU	-	✓	-	-	✓	-	-	✓ √				
59.	UPAK	-	✓	-	-	✓	-	-	✓ √				
60.	RADM	-	✓	-	-	✓	-	-	✓ √				
61.	CORIDEK	-	✓	-	-	✓	-	-	✓ √	✓			
62.	MAMBILI	-	✓ √	-	-	✓ √	-	-	✓	✓ √			
63.	PNR	-	✓ √	-	-	✓ √	-	-	✓	✓ √			
Sub-total (West – Kongo Central)[15]		0	12	1					**12**	**8**	**0**	**0**
Total No. of active producers												

Notes:

- 'V' as appropriate under "Category of Producers", "Region" and "Crop"
- For 'Producers', there is no need to mention name of the all individual seed producers. Just write 'Individual seed producers
- Region: East (Kivu), west (Kongo Central), south (Katanga), and north (Equateur, Ubangis, Mongala)

[15] One agro-dealer imports soya bean seed as an agent of a foreign seed company. Not counted as a producer, but sales are counted under market size and market share

16.3 APPENDIX 3: VARIETIES SOLD TO FARMERS, BUT NOT RELEASED BY SENASEM

Region	Provinces	Number of varieties					Names of varieties
		Maize	Rice	Beans	Soya beans	Total	
East	North Kivu, South Kivu	15	7	14	5	41	**Maize:** Ecavel1, Zm625, Zm627, UH5053, Bazooka, Sam4vita, Duma43, Longe10H, PANNAR53,H629, H628,H627, PNR67,ZM607, SC117 **Rice:** Rukaramu, Fashingibo, Tox3154, Namweru, Nerica 1, IRAT13, Mayiyakunya **Beans:** Kabulangi, HM21-7, CODLMB001, MAC44, NABE4, RWV1129, RWR2154, RWR2245, Namulengi, Pigeon vert, Kabulanketi, KAROUGE, Kasoda, Kademayi. **Soybeans:** PK6, SB24, SAFARI, SEQUELE, CANADA
South	Katanga	16	0	1	2	19	**Maize:** SC627, SC719, PN53, SC647, SC727, SC701, SC633, SC634, SC637, SC608, SC602, SC513, SC506, SC403, SC720, Zamseed700. **Beans:** PNR148 **Soybeans:** Kaleya, Hernon
West	Kongo Central	8	0	0	1	9	**Maize:** SC719; SC 647; SC 637; SC 513; SC 608 ;SC 602, 634MRISEED, 624MRISEED **Soybeans:** MRISEED
North	Equateur, Ubangui, Mongala	0	0	0	0	0	
Total		39	7	15	8	69	

16.4 APPENDIX 4: SEED-TO-GRAIN PRICE RATIOS BY REGION

		Maize OPV	Maize Hybrid	Rice	Beans	Soya beans
East	Seed price (USD/kg)	1.3	2.4	1.4	1.8	1.7
	Grain price (USD/kg)	0.6	0.6	0.8	0.9	0.7
	Seed-to-grain price ratio	2.2	4.0	1.8	2.0	2.3
South	Seed price (USD/kg)	2.8	5	5	4.5	4.5
	Grain price (USD/kg)	0.3	0.3	4	4	4
	Seed-to-grain price ratio	9.2	16.6	1.3	1.1	1.1
West	Seed price (USD/kg)		2.5	2.5	4	4
	Grain price (USD/kg)		1	1	2.5	2
	Seed-to-grain price ratio		2.5	2.5	1.6	2
North	Seed price (USD/kg)	1.8		1.8	2.0	2.0
	Grain price (USD/kg)	0.3		0.2	1.4	1.0
	Seed-to-grain price ratio	6		7.6	1.4	2.0
Overall	Seed price (USD/kg)	2.0	3.3	2.7	3.0	3.0
	Grain price (USD/kg)	0.4	0.6	1.5	2.2	1.9
	Seed-to-grain price ratio	5	5.5	1.8	1.4	1.6

16.5 APPENDIX 5: TEMPORARY LIST OF NATIONAL SEED CATALOGUE FOR THE FOUR CROPS

Crop	Origin	Number of varieties	Names /Denomination
Maize	UNILU/CIMMYT Harare	3	ZM625 (NSIMA)
			ZM725 (APSKA)
			ZM525 (BUKIDI BUKIDI)
	INERA MULUNGU/CIMMYT Harare and Uganda NARO	3	ZM627 (KITOKO)
			ZM625 (TOKACHINI)
			UH50-53 (AMANI)
Total (maize)		6	
Rice	PNR/ Africa Rice Benin/Egypte	4	ARC 37-16-1-51G
			ARICA2
			NERICA-L14
			GIZA182
Total (rice)		4	
Climbing Bean	INERA Mulungu/Kenya(1), Rwanda (2), Colombia(3+5), CIAT(4+6)	6	NUV131-1 (MANJONJO, MASESE)
			RWV1129 (BALIAHAMWABO,KINJA)
			CODMLV095 (BINJA, SAWASAWA, GOBWINE)
			MBC23 (KIPENDWA, MUSHAGALUSA)
			CODMLV096/2013A (PENDEZA)
			MAC44 (NSIMIRE, NAMUNENE, KOMBIDOKI)
Bush Bean	INERA Mulungu/Collections Sud Kivu(1), Uganda(2), Bilfa 5(3), Rwanda(4)	4	MUNYANYA (TOCHACHINI, DUCHIME, DEMOCRATIA)
			NABE4 (NAMBIYO MBIYO, RUKUNDO)
			HM 21-7 (NAFRANGA, ZIRIMO)
			RWR1668 (KINJA, MWIZARAHENDA)
Total (Beans)		10	

16.6 APPENDIX 6: EXTENSION WORKERS IN DRC, BY REGION AND GENDER

Region	STATISTIC	2016			Satisfaction with extension officers
		Male	Female	Total	
East (North and South Kivu)	Total (Govt extension workers)	893	101	994	4.0
	Total (Private companies & NGOs)	85	23	105	5.8
	TOTAL (East)	978	124	1099	
South (Katanga)	Total (Govt extension workers)	0	0	0	0.0
	Total (Private companies & NGOs)	9	0	9	8.0
	TOTAL (South)	9	0	9	
West (Kongo Central)	Total (Govt extension workers)	0	0	0	
	Total (Private companies & NGOs)	55	35	90	5.0
	TOTAL (West)	55	35	90	
North (Mongala, Ubangis, Equateur)[16]	Total (Govt extension workers)	-	-	-	
	Total (Private companies & NGOs)	-	-	-	
	TOTAL (North)	-	-	-	
TOTAL		1,042	159	1,201	

[16] Data not available

Adam Smith International

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