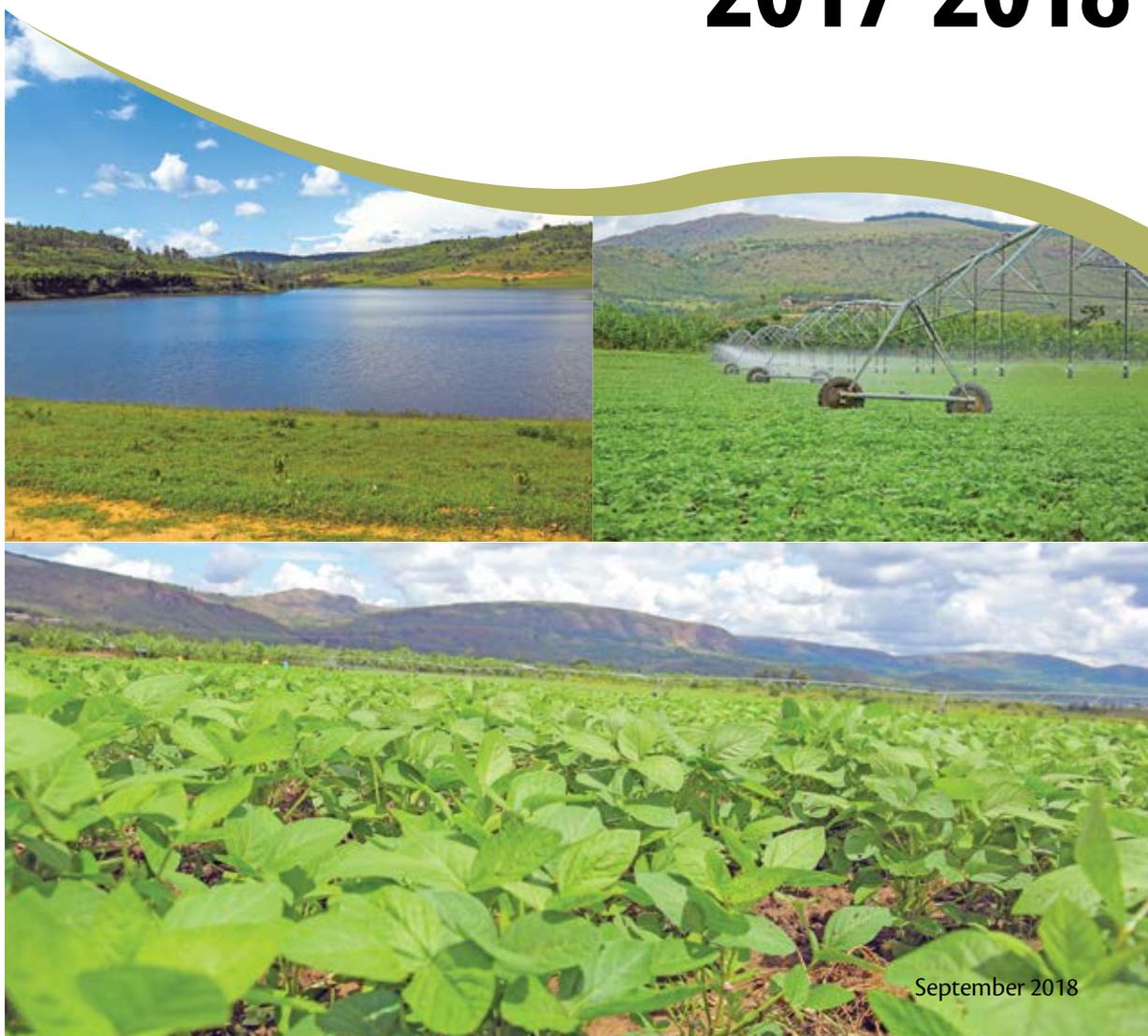


REPUBLIC OF RWANDA



Ministry of Agriculture and Animal Resources
(MINAGRI)

ANNUAL REPORT **2017-2018**



September 2018

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ABBREVIATIONS

ASWG:	Agriculture Sector Working Group
CAADP:	Comprehensive African Agriculture Development Program
CFSVA:	Comprehensive Food security and vulnerability Analysis
CIP:	Crop Intensification program
CWS:	Coffee washing station
FFs:	Farmer Field School
GAP:	Good Agriculture Practices
GDP:	Gross Domestic Products
HCoE:	Horticulture Center of Excellence
LMP:	Livestock Master Plan
MCCs:	Milk Collection Centers
MINAGRI:	Ministry of Agriculture and Animal Resources
MININFRA:	Ministry of Infrastructures
NAEB:	National Agriculture Export Development Board
NAP:	National Agriculture Policy
NEPAD:	New Partnership for Africa’s Development
NISR:	National Institute of Statistic of Rwanda
NST:	National strategy for transformation
PSTA:	Strategic plan for Agriculture Transformation
RAB:	Rwanda Agriculture and Animal Resources Development Board
RDDP:	Rwanda Dairy Development Project
RTDA:	Rwanda Transport development Agency
RYAF:	Rwanda Youth in Agriculture
SEDO:	Social Economic Development Officer
SSIT:	Small Scale Irrigation Technology
VAT:	Value Added Tax

FOREWORD



Rwanda's agriculture transformation agenda is on the move. The country's tremendous achievements registered in the agriculture sector have translated into improved livelihoods of Rwandan population as our food security got strengthened even more than previous years. This optimistic trend is well-documented in the 2017-2018 fiscal year report, which I am honored to present to you.

The agriculture sector growth rate registered during this fiscal year amounted to 8 per cent. This is the right step towards reaching our national food self-sufficiency goal which is currently over 90 percent of all food consumed in the country. Credit goes to all staff of the ministry, its agencies, our development partners and stakeholders who have been working resolutely to make this happen.

It's also worth to note that these achievements reflect great efforts made by the Government during the third phase of the Strategic Plan for the Agriculture Transformation (PSTA 3) which ends with this fiscal year. This move is both stipulated by the 7-Year Government Program and the National Strategy for Transformation (NST1).

As we closes this fiscal year, we are cheerful to roll out our brand new Strategic Plan for Agricultural Transformation Phase IV (PSTA 4), which builds on the achievements of the implementation of previous strategies.

PSTA 4 sets out ambitious but not insurmountable plans to turn around the sector and transform it into a knowledge-based value creating sector that contributes to the national economy and ensures food and nutrition security by 2024. To be achieved, the development of new tools, new technologies with potential to mitigate production constraints need to be introduced. This will ease and enable the achievement of the sector targets.

We have full confidence in the long-standing collaboration with our partners and stakeholders. The experience from the past years assures us that there is a solid resolve to move fast forward to unlock our potential and tackle some of the existing challenges in our farming systems.

Let me once again show my gratitude by thanking each and every one of our partners and stakeholders for their precious contribution to what we have been able to achieve during this fiscal year in particular, and over the previous PSTA 3 period.

I continue to count on your unrelenting collaboration and support as we move to the next step of our agriculture transformation journey.

Dr. Gerardine MUKESHIMANA
Minister of Agriculture and Animal Resources

MINAGRI 2017 highlights

New policy instruments:

National Agriculture Policy and Strategy Plan for Agriculture Transformation (PSTA4) developed and approved

Investment:

- Private sector investment increased from 758.5 (million USD) in 2016/17 to 774.5 (million USD) in 2017/18:
- UNILEVEL TEA RWANDA invested 30 Million USD
- Fertilizer blending plant construction under process
- The Export Targeted Modern Irrigated Agricultural (ETI) Project, is financed by EXIM Bank of India through a Line of Credit of USD 120.05 Million,

Climate resilience interventions

- Radical terraced construction: 118,392.4 ha
- Progressive terraces: 932,282 ha
- Marshland developed: 36,521 ha
- Hillside developed: 8,780 ha
- Small scale irrigation (SSIT): 6,874 ha

Social protection:

- 327,846 cows so far distributed to poor families
- Small stock distributed to vulnerable families:
 - 1,320 pigs and 15,000 poultry distributed to poor families

Agriculture export Earnings:

- Earnings generated from export is \$ 515.9 million compared to \$ 356.5 million of the FY 2016-2017 indicating an increase of 44.71%;
- 20,353 MT of coffee exported, 27,824 MT of tea exported and 21,850 MT of horticulture exported,
- Agriculture export share is 31% of traditional agricultural exports against 69% of non-traditional.

Agri GDP growth:

- Agri GDP growth reached 8% in 2017-2018
- 31% of agriculture contribution to GDP

Agriculture Finance lending:

- Increase in agri-finance from 5.2% in 2016-2017 to 5.8 % in 2017-2018.

Animal products:

- Milk production increased from 816,791 to 847,178 MT
- Meat production Increased from 152,029 to 162,470 MT
- Fish production Increased from 28,705 MT to 31,465 MT
- Eggs production increased from 7,475 MT to 7,936 MT
- Honey production increased from 5,105 MT to 5,200 MT

Food security and nutrition:

- Percentage of food secure households increased from 80% to 81.3%, which means increase of 1.3 % from 2015 to 2018.

-

Land use

- Land mechanized increased from 35,000 ha to 41,010 ha
- Percentage of mechanized farm operations stands at 25%
- Percentage of agriculture population: 58 %
- Land consolidation: 1,029,483 ha in 2018A and 522,310 ha in 2018 B
-

Reporting system

- MIS is operational, and the main source of data used in agriculture sector
- It is the main tool for generating information for the reporting on agricultural performance

EXECUTIVE SUMMARY

The agricultural sector is of critical importance for the economic development, poverty reduction, and nutritional security of Rwanda. The sector contributed 31 per cent to the national Gross Domestic Product during 2017-2018 fiscal year. This annual report highlights key achievements of the agriculture sector of Rwanda in FY 2017/18 which also marks the end of the third Strategic Plan for Agriculture Transformation (PSTA 3). The Ministry of Agriculture and Animal Resources (MINAGRI) is transitioning from the implementation of PSTA 3 to its fourth edition PSTA 4. Within the new framework of PSTA 4, the role of the Government will be shifting from that of driver to that of an enabler of the agricultural development. This is evidenced by the fact that MINAGRI has been increasingly working with diverse stakeholders of the Agriculture sector, namely Civil Society Organizations (CSOs), NGOs, Development Partners and the private sector. This commitment to have private sector led agriculture is documented in the officially published National Agriculture Policy (NAP, 2018) and PSTA 4.

The 2017/18 fiscal year was marked by the development of PSTA 4 as well as the finalization of the new National Agriculture Policy. PSTA 4 outlines priority investments needed in agriculture and estimates required resources for the execution of the strategy throughout the period going from 2018 to 2024. The PSTA 4 builds on the achievements of the PSTA 3, while envisioning a transformation of agriculture from a subsistence sector to a knowledge-based value creating sector, that contributes to the national economy and ensures food and nutrition security. The strategy has a strong focus on private investments. There is a tacit recognition in the document that the growth of the agriculture sector must be driven by investments of private actors. PSTA 4 is built on 4 priority areas, namely:

- Innovation and extension services
- Productivity and resilience
- Inclusive markets and value addition
- Enabling environment and responsive institutions

This fiscal year has seen increased development of Agriculture related infrastructures to support productivity and commercialization of agriculture outputs. Given that 90% of domestic cropland is on slopes, hence investing in land management structures is central to improving productivity. The total soil conservation and land husbandry is currently at 932,282 ha and 118,392.4 ha of land under progressive and radical terraces respectively, of which 8,678 ha of progressive and 8,351 ha of radical terraces were developed in this financial year. Irrigation schemes has allowed farmers to move from rain-fed agriculture to diversified, high value crops hence resulting to increased cropping intensity and land productivity The country has registered

52,175 ha under irrigation - including 36,521 ha of marshlands, 8,780 ha of hillsides and 6,874 ha of small scale irrigation sites; 1,367 ha of hillside irrigation; 703 ha of marshland rehabilitated and 2,300 ha developed under small scale irrigation. The total of annual achievement of area under irrigation is 2,070 ha, which is a 78% achievement from the set annual target FY 2017/18. The Ministry continued efforts to contribute to social protection and nutrition through GIRINKA, One Cup of Milk per Child and Kitchen Garden promotion programs. So far 327,846 cows have been distributed under GIRINKA since its inception. The Program in fiscal year 2017/18 targeted the distribution of 31,405 cows to poor households. By June 2018, 30,616 cows had been distributed to the poor families, which is a 97.48 % achievement.

The agriculture export commodities generated \$ 515.9 million through export of traditional and non-traditional export commodities representing 31.2% and 68.8% respectively. The revenues generated from the export of Agricultural export products for the FY 2017-2018 was \$ 515.9 million compared to \$ 356.5 million of the FY 2016-2017 indicating an increase of 44.71%.

Regarding food security mechanism, the Government through its National Strategic Grain Reserves Project registered an 11,682.5 MT of storage (7,571.4 MT of maize and 4,111.1 MT of beans) and the total capacity of storage constructed is estimated to 311,795 MT. At District level a stock of 67,609.7 MT was registered (53,388.6 MT of maize and 14,221.1 MT of beans). Thus the total available strategic reserve of maize and beans at the end of FY 2017-18 was 79,292.2 MT, which is 66% of the annual target (120,000 MT). Proposed technical actions to increase National food reserves of maize and beans are recommended: a) train farmers on storage management and pest control, b) availing additional warehouses for storage purposes and c) collect data on maize and beans stored by private companies. Given that the Agriculture sector will continue to be instrumental to realize the country's objectives as specified in Vision 2020 and NST1 (National Strategy for Transformation, 1), the Government of Rwanda through the Ministry of Agriculture and Animal resources will continue to put efforts in the sector.

BACKGROUND OF THE AGRICULTURE SECTOR

The agriculture sector is credited in playing a major role in nationwide poverty decline, generation of foreign exchange and supplying 75% of raw materials for industry purposes. Poverty reduction is currently at 39.1% from 44.9% in 2011. In 2017 the agricultural sector GDP grew by 7%, and contributed 31% of the national Gross Domestic Product (NISR, 2017/18).

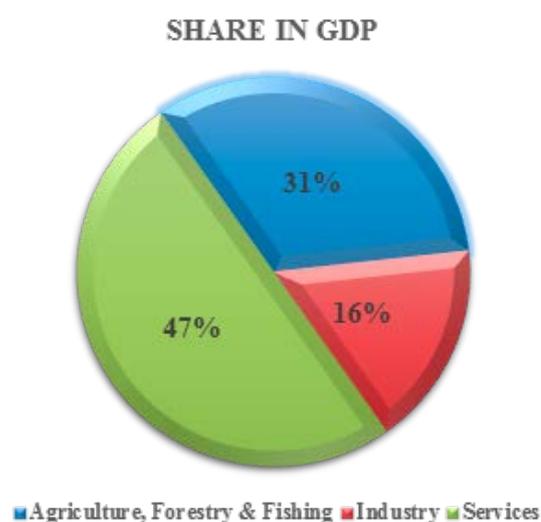


Figure 1: Share in GDP

The full count of agriculture activities including agriculture employment and subsistence foodstuff production reveals that in February 2018, 3.9 million people representing 58 % of working age population were engaged in agriculture activities in one way or the other.

Of noteworthy remarks, the rebound of the agriculture growth to 8% is remarkable with an impressive 12% growth for the livestock program and 14% growth of exports crop¹. Food Security situation came back to a pre-crisis situation with a proportion of food insecure households at 18.7% according to the CARI indicator reported under the CFSVA 2018.

Agriculture policy orientation

The vision as stated in the revised National Agriculture Policy (NAP, 2018) is to have a nation that enjoys food security, nutritional health and sustainable agricultural growth from a productive, green and market-led agriculture sector. The mission of the sector is to “ensure food and nutrition security of Rwandans by using modern agribusiness technologies, professionalizing farmers in terms of production, commercialization of the outputs and then creating a competitive agriculture sector”. In order to fulfill the National Agriculture policy (NAP, 2018), the Ministry of Agriculture and Animal Resources (MINAGRI) has developed its fourth Strategy Plan for Agriculture Transformation (PSTA 4) to promote the growth of the agriculture sector in partnership with the private sector.

¹ At GDP growth rates at constant 2014 prices (NISR, 2018)

The tables below illustrate the agriculture contributions to the national economy and vision 2020. These contributions are related to agriculture growth, GDP, population involved in agriculture sector and adoption of agriculture technologies.

Table 1: Macroeconomic Importance of the Agriculture Sector

Category	Indicator	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18
GDP growth	Growth Rate (percentage change from previous year)	6.2%	8.3%	6.7%	5.0%	8.6%	8.6%	3.4 %	8.9%
Agriculture, Forestry & Fishing	Growth rate	5%	5%	7%	2%	7%	5%	3 %	8%
	Share in GDP	28%	28%	29%	29%	28%	28%	31 %	31%
Industry	Growth Rate	13%	14%	12%	6%	11%	10%	2 %	8%
	Share in GDP	15%	16%	17%	17%	17%	17%	16 %	16%
Services	Growth Rate (percentage points)	6%	9%	7%	6%	9%	10%	5 %	10%
	Share in GDP	48%	48%	47%	48%	48%	47%	47 %	47%

Source: NISR, National Accounts 2017-2018

Progress toward Vision 2020 targets

Table 2: Select Vision 2020 Targets

Revised Selected Vision 2020 Indicators	2000 (calendar)	FY 2017-2018	2020 revised (calendar)	Source
Agricultural GDP growth (%)	9	8	8.5	NISR
Agriculture as % of GDP	45	31	25	NISR
Agricultural Population (%)	90	58	50	NISR, Labour Force Survey Trend. Feb. 2018 (Page ix)
Fertilizer application (kg/ha/annum)	0.5		50	MINAGRI
% of Agriculture Operations Mechanized	n.a.	25%	40	MINAGRI

CHAPTER 1: AGRICULTURE DEVELOPMENT

1.1. Agricultural land use

1.1.1. Land consolidated by crop in 2018A&B compared to 2017A&B

Due to the growing demographic pressure on land, the agricultural lands in Rwanda are highly fragmented. Since the use of inputs such as the improved seeds and fertilizer can be translated into profitability for smallholder farmers only if the land fragmentation is overcome, the land use patterns need to be organized. Through the Crop Intensification Program, the land use successfully rearranged in a synchronized fashion to grow specific food crops and hence improves the productivity and environmental sustainability.

The table below summarizes the land consolidated for priority crops during 2017-2018 FY, compared to 2016-2017 baseline and annual targets:

Table 3: Land use consolidation for priority crops during 2017-2018 FY at National level

Crops	Baseline (2016-2017 FY) in Ha		Targets (2017-2018 FY) in Ha		Achieved (2017-2018 FY) in Ha	
	Season A	Season B	Season A	Season B	Season A	Season B
Maize	294,027	64,153	252,131	68,372	336,190.6	72,395.3
Beans	367,426	353,181	272,948	278,704	450,337.9	317,072
Irish potatoes	63,274	59,086	65,822	63,390	98,735.2	64,789.3
Wheat	6,770	41,936	6,803	37,415	15,583.6	36,571
Cassava	42,031		106,713		96,575	
Rice	9,566	13,456	14,509	12,366	20,120.6	15,745.9
Soybean	11,173	12,178	13,573	23,351	11,940.4	15,737

Source: MINAGRI Imihigo reports, 2017-2018 FY

1.1.2. Soil conservation and Land husbandry

Since 90% of domestic cropland is on slopes ranging from 5% to 55%, investing in land management structures is central to improving productivity. This makes radical terraces development, accompanied by soil fertility management and soil erosion control a priority for every fiscal year. For less steep slopes progressive terracing and agroforestry have proven successful in reducing erosion and increasing the economic returns from the land. During 2017-2018 FY, 8,351 ha of radical terraces and 8,678 ha of progressive terraces have been developed at national level, and this led to a cumulative area of 118,399 Ha under radical terraces and 932,282 hectares under progressive terraces.

1.1.3. Irrigation development

Irrigation allows farmers to move from rain-fed agriculture, to diversified, high value crops, thus increasing cropping intensity and land productivity. Therefore irrigation development remains a key priority for the Ministry of Agriculture. During 2017-2018 FY, (i) 703 ha of marshlands were rehabilitated (435 ha of Migina and 268 ha of Kabuye marshlands). (ii) 1,367 ha of Muyanza hillside developed, and (iii) 2,300 ha under SSIT irrigation developed.

The total land under irrigation is estimated to 52,175 ha by end June 2018 which is composed of 36,521 ha of marshlands, 8,780ha of hillside and 6,874 ha of SSIT developed.

a) Export Targeted Modern Irrigated Agricultural ETI

The Export Targeted Modern Irrigated Agricultural (ETI) Project, is financed by EXIM Bank of India through a Line of Credit of USD 120.05 Million, aiming to deliver on the following components: (1) Irrigation and integrated watershed development for Mpanga and Mahama sectors in Kirehe district for a potential area extended on 3390 Ha, (2) Construction of state of art Centre of excellence in farm mechanization to support research and development , (3) Tomato processing plant with a daily capacity to treat 80MT, as a valorization complement to the yield from the irrigated land, (4) Solar powered plant with a capacity to generate 3 MW and (5) capacity building program for sustainability and management purpose. Detailed Project Reports-DPR were completed and validated for each of the listed above component. The physical development of Mpanga irrigation and watershed development stands at 38%, both parts of Mahama 1 & 2 and Tomato processing plant were at final stage of procurement by end June 2018.

b) Nasho Irrigation Scheme by HGBF

The irrigation project initiated by HGBF has following components: productive investment, aiming to boost agricultural productivity through a holistic approach accounting for the multiple stages of crop production and value chain development at the project site/area. Investment includes irrigation, mechanization, and improved access to inputs, post-harvest infrastructure, processing and value addition, and farmers' training.

Through this project, 1,173 ha have been sustainably managed and operated by smallholders to improve their production. Maintenance of irrigation infrastructures has been done at 100 %. For 2,537 farmers mobilized, 75% of them have purchased seeds and fertilizers for their plot to increase soil productivity. The table 4 shows the average yield obtained after the use of fertilizers.

Table 4: Average yield obtained at Nasho irrigation scheme

Crops production in the scheme	Achievement of average yield/ ha	Target of average yield/ ha	Rate of achievement (%)
Maize	5.5 tons/ ha	6tons/ ha	92
Soybean	1.2 tons/ ha	1.5 tons/ ha	80
Bean	2 tons/ ha	1.5 tons	133

Source: HBGF report 2017-2018

Extension services by field technicians is being promoted in order to allow knowledge transfer for both center pivot irrigation systems and albeit use of inputs within pivots. However, flooding and siltation are among the threat, so that quick win solutions were proposed and implemented through a joint collaboration with Ministry of Agriculture and local government.

1.1.4. Agriculture Mechanization

Agriculture mechanization is among the key technological pillar to boost the yield production by minimizing the harvest and post-harvest losses while saving the human and investment capitals in farm operation. In partnership with private mechanization service providers, the sub-sector has increased the land tilled using machine from 35,000 to 41,010 Ha. Secondary, 2000 farmers were trained on use of machinery in various farm operation, 200 tractors operators and 150 agronomists were also trained through the conducted on farm demonstration campaigns. In order to enable the affordability of the on farm operation, 9 service provider companies were contracted to exclude VAT from the charges to be applied to the farmer.

In collaboration with the private service providers, new post-harvest technologies were developed, disseminated and adopted by 12 rice cooperatives and 7 maize growers' cooperatives. These consist of harvesters, threshers and winnowing machines for rice and wheat plantation. On the other hand, construction of Mechanization Centre of excellence was started effective from October 2017, by Techno-Fab Company, as a component under the Line of Dollar Credit of 120.5 million of USD. The research and development Centre is expected to be a regional hub for innovation and development of new prototype of farm machinery, testing and technology expansion. The civil works for building construction stands at 10%, while the Datasheets for agricultural mechanized equipment to be bought from India were at approval process by June 2018, with an overall project rating at 20%.

1.2. Agricultural inputs

1.2.1. Access to Agriculture Inputs: Seed

Access to improved seeds to our farmers is one pillar of the crop intensification program. A half of required seed of Maize, Wheat and Soya during season A&B 2018 are from import regardless of the country of origin.

Table 5: Imported seeds distributed Vs locally seeds produced

Crop	Imported Seed distributed & used in MT (Season A&B 2018)			Locally produced Seed in MT (Certified only) ¹
	Season A 2018	Season B 2018	Total per crop	
Maize	1,745.6	747.5	2,493.1	1,889
Wheat	889	589.3	1,478.3	40
Soya	291.4	89.4	380.8	313.2
Grand Total	2,926	1,426.2	4,352.2	2,242.2

Source: RAB report, 2017- 2018

Considering the table above, the seed produced locally are covering 51.5% (2,242.2 MT) of the total seed demand in the country (in both seasons). The Government of Rwanda committed to reduce the dependence on inputs importation especially on seed sub-sector and a target was set for 2020/21 with a clear exit strategy responding to this pledge. It considers key priority cereals (hybrid and open pollinated varieties maize, rice and wheat), oil and pulses (soybean), roots and tubers (cassava and Irish potato) and Banana.

Main interventions tackled by this strategy are the strengthening of seed regulations: for instance Ministerial order no 015/11.30 of 06/11/2017 determining modalities for lodging an objection to the application for plant breeders' rights, published in official gazette no 46 of 13/11/2017, to build capacity of seed multipliers and avail materials from research for multiplication and dissemination, to establish private led seed industry that smooth the logistics facilities that previously caused heavy cost to the country due to delays in the importation and distribution process in and outside the country.

It is worthy to note that at the end of 2018-2019 FY, RAB recorded 232 active seed multipliers operating in different value chains including maize, rice, beans, wheat, Irish potato and soybean.

1.2.2. Access to Agriculture Inputs: Fertilizer

Table 6: Fertilizer distributed and used across the country in the season A& B

Fertilizer type	Seasons		
	18 A (MT)	18 B (MT)	Total (MT)
a) Macronutrients			
DAP	8,818.3	9,160	17,978.3
UREA	5,164.6	6,685	11,849.6
NPK	7,547.3	15,982.2	23,529.5
b) Micronutrients	18 A	18 B	Total
AMIDAS	1,239.3	555	1,794.3
CEREAL			
KCL			
NITRABOR			
TRACEL BZ			
WINNER			
Grand total	22,769.5	32,382.2	55,151.7

Source: MINAGRI annual report 2017-2018

The quota of fertilizer distribution and used (55,151.7 MT) as recorded by the districts through MINAGRI MIS system is much higher than the quota distributed through the Smart Nkunganire/ Subsidy scheme (43,522.4 MT). This emphasizes on the improvement on the fertilizer awareness and application by the farmers (smallholder and big farmers) on various crop value chains.

During 2017-2018 FY, the quantities of compost and lime used by farmers were 40,070 and 19,808.3 MT respectively; it was mainly used in the districts having high soil acidity.

1.3. Access to Advisory services and extension

Twigire Muhinzi is a homegrown extension model through which Extension services are delivered to farmers. These extension services include advice on good agricultural practices (GAP) by distribution of agriculture extension materials and conducting technological trainings that help farmers to increase their crop production and productivity.

During the year 2017 -18, extension services were delivered through training of extension agents (Farmers promoters, FFS facilitators., SEDOs, Sector agronomists), focusing on CIP priority crops, Crop protection and Smart Nkunganire system, establishment of demo plots and Farmer Field Schools (FFs) plots. Extension agents also received incentives such as extension training manuals and guides, T-shirts, Caps, protection masks, gaggles and inputs for establishment of demonstration plots.

The following table indicates the type of trainings that were conducted;

Table 7: Type of trainings

Training conducted	Number of extension agents	Male	Female
GAP (Good Agriculture Practice)	13,601	10,376	3,225
Crop protection	17,704	13,539	4,165
Total	31,305	23,915	7,390

Source: RAB, 2018

Through Twigire Muhinzi, farmers are also reached by these extension agents through farmer's mobilization, field visits to demo plots and to Farmer Field Schools (FFS) plots. The following table indicates the number of farmers reached by extension agents: Demo plots and FFS plots established.

Table 8: Number of farmers reached by extension services during 2017-2018 FY

Indicator	Target for 2017-2018 FY	Achievement in 2017-2018 FY
Number of farmers reached	1,600,000	1,738,764
Number of demo plots established	18,000	18,956
Number of Farmer Field Schools established	15,000	14,886

Source: RAB, 2018

1.4. Agricultural Productivity and crops production 2017/18 FY

a) Season 2018A

Table 9: Ha of land planted per crop and per season

Crop	Cultivated area in ha by crop			Production in MT of main crops			Yield of main crops (t/ha)
	Total 2018A	Total 2017A	Change	Total 2018 A	Total 2017A	Change	Overall Yield 2018A
Maize	218,179	210,743	4%	332,670	314,345	6%	1,525
Sorghum	27,151	29,908	-9%	36,581	40,796	-10%	1,122
Paddy rice	16,938	16,920	0%	57,934	55,198	5%	3,420
Wheat	4,490	3,242	39%	5,950	3,575	66%	1,325
Cassava	194,717	218,391	-11%	486,440	449,182	8%	13,540
Sweet potato	87,456	87,209	0%	661,583	568,596	16%	7,565
Irish potato	50,836	39,342	29%	439,512	377,862	16%	8,646

Crop	Cultivated area in ha by crop			Production in MT of main crops			Yield of main crops (t/ha)
	Total 2018A	Total 2017A	Change	Total 2018 A	Total 2017A	Change	Overall Yield 2018A
Taro &Yams	11,406	35,356	-68%	70,653	129,726	-46%	5,623
Cooking bananas	85,524	96,640	-12%	406,044	408,787	-1%	18,991
Dessert bananas	30,110	35,437	-15%	112,283	112,429	0%	20,671
Bananas for beer	111,213	105,862	5%	434,356	452,706	-4%	12,271
Bush bean	202,996	187,323	8%	164,011	145,504	13%	808
Climbing bean	84,222	80,904	4%	87,178	78,858	11%	1,035
Pea	15,121	9,392	61%	9,001	6,751	33%	595
Groundnut	20,474	25,004	-18%	12,546	11,873	6%	391
Soybean	24,011	22,301	8%	12,156	10,701	14%	506
Vegetables	13,794	20,059	-31%	162,938	132,552	23%	11,938
Fruits	5,975	6,333	-6%	35,883	55,576	-35%	8,418

Source: NISR/ SAS 2018A

b) Season 2018 B

Crop	Cultivated area in ha by crop			Production in MT of main crops			Yield of main crops (t/ha)
	Total 2018B	Total 2017B	Change	Total 2018 B	Total 2017B	Change	Overall Yield 2018B
Maize	78,151	85,130	-8%	91,534	85,912	7%	1,171
Sorghum	116,986	112,694	4%	118,111	118,310	0%	1,010
Paddy rice	16,739	17,283	-3%	55,946	64,715	-14%	3,532
Wheat	7,735	7,448	4%	7,525	7,224	4%	973
Cassava	188,485	164,529	15%	640,759	590,481	9%	11,398
Sweet potatoes	79,983	85,200	-6%	498,790	483,898	3%	6,236
Irish potatoes	60,644	45,923	32%	396,064	398,934	-1%	6,531
Taro &Yams	19,287	22,028	-12%	97,331	93,131	5%	5,047
Cooking bananas	90,175	93,549	-4%	353,652	315,481	12%	17,891
Dessert bananas	34,153	32,575	5%	117,057	111,312	5%	15,915

Crop	Cultivated area in ha by crop			Production in MT of main crops			Yield of main crops (t/ha)
	Total 2018B	Total 2017B	Change	Total 2018 B	Total 2017B	Change	Overall Yield 2018B
Bananas for beer	108,091	100,348	8%	346,304	326,729	6%	9,615
Bush beans	177,327	191,955	-8%	142,077	139,343	2%	801
Climbing beans	91,778	84,481	9%	91,463	86,788	5%	997
Peas	10,612	10,298	3%	5,689	5,600	2%	536
Groundnuts	20,983	20,451	3%	9,734	8,805	11%	464
Soybean	30,431	30,486	0%	10,427	12,925	-19%	343
Vegetables	12,480	19,010	-34%	145,272	155,476	-7%	11,641
Fruits	6,677	6,844	-2%	17,711	16,378	8%	3,916

Source: NISR/ SAS 2018B

1.5. Pest and disease management

For pests and diseases management, farmers are advised to use non-chemical control practices (Cultural, physical, mechanical control and use of biological control) before chemical control options because they are inexpensive and safe to humans, farm animals and the environment. Farmers are advised to do regular field monitoring to check if there are no pests in their field. Many interventions were done during 2017-2018 FY through field visits, meetings and community works in affected areas to manage identified pests, especially Fall Armyworm (FAW). As strategic stock of pesticides, around 4,950 liters of pesticides were purchased to manage pests especially maize stalk borer and fall army worm. During 2018B season, on 6,234.5 ha of Maize affected by FAW, over 96% were managed and treated and affected crops were recovered. Over 1,616 liters of different pesticides including Cypermethrine, Cypermethrin+Profenofos, Pyrethrum, and Imidachloprid were distributed to farmers in affected areas to manage FAW and other insect pests. Many Trainings of Extension agents on good agriculture practices and on different pest and diseases were conducted. Due to the outbreak of Fall Armyworm (FAW), training was focused on this pest and around 13,090 farmer promoters, 1800 FFS facilitators, 392 sector agronomists, 1,900 SEDOs, 451 Agro-dealers and other extension agents (especially CIP focal persons) were trained during 18A & B seasons on the management of the above mentioned pest. Moreover, about 212 extension agents including sector and district agronomists, farmers and agro-dealers were trained on Pesticides Safe use, handling and self-protection in Nyagatare, Kamonyi, Muhanga, Nyanza, Gisagara and Nyamagabe districts.

CHAPTER 2. AGRICULTURE AND LIVESTOCK RESEARCH AND INNOVATION

2.1. Cereals Program

2.1.1. Rice Sub-Program

During 2017/18 fiscal year, 10 best varieties were advanced and promoted to be tested in Ruhango and Nyamasheke districts, regions with severe low night temperatures. In order to support seed system, the seed production was conducted at Cyimpima (Rwamagana), Cyili (Gisagara) and Bugarama (Rusizi).

15 varieties were purified using one row per panicle approach and breeder seeds for each variety were availed for foundation seeds production and 10 tons were distributed to private seeds producers for certified seeds production. The total certified seeds produced by the private seed producers were 287 tons.

2.1.2. Maize Sub-Program

Thirteen (13) new maize hybrid varieties were selected for final verification from advanced yield trials conducted both in mid and high altitudes.

In total, 150 kg of breeder's seeds, 1,200 kg of pre-basic seeds and 10,400 kg of basic seeds were produced. The total certified seeds produced by the seed producers were 1,889 MT.

In the context of technology transfer, around seventy seed producers were trained both in class and on field in hybrid seed production procedures. Furthermore, four seed producers that comprised: RISCO (Rwanda Improved Seed Company Ltd), IABM (Iterambere ry'Abahinzi ba Makera), Rumbuka Seeds Ltd and EMFAGM (Ebenezer Mixed Farming & General Merchandise Ltd) were backstopped for certified seed production.

2.1.3. Wheat subprogram

During the 2017/2018 fiscal year efforts have been put in place to reduce the country's reliance on seeds imports through local seed production. In this respect 3,418 kg of pre-basic seeds and 40 MT of certified seeds were produced. 10 best performing varieties completed on farm trials and are now ready for release. Innovation platforms (IPs) have been used as an agricultural extension tool to encourage easy adoption of agricultural innovation by farmers. Three wheat innovations platforms were established in Cyumba (Gicumbi), Butaro (Burera) and Gataraga

(Musanze). In total, the IPs comprised 137 members of which 101 are male and 36 female. In these IPs, 13 demo plots and five farmer field schools (FFS) were also established.

2.2. Roots and tubers

2.2.1. Cassava Sub program

The Sub program produced 89,690,000 cuttings were produced, certified as quality declared seeds (QDS) and distributed to farmers across the country. Cassava research and technology transfer focused on (i) increasing Cassava genotypes diversity for breeding activities; (ii) the development and dissemination of high yielding and disease tolerant cassava varieties and (iii) assessment of the incidence of pests and diseases and their effects on crop)

(i) Increasing Cassava genotypes diversity for breeding activities

- Introduction and test of promising clones for major agro-ecologies of Rwanda: In total, 3400 plantlets of 17 selected clones from 5 countries (Uganda, Tanzania, Kenya, Malawi and Mozambique) were introduced and their evaluation is ongoing at Rubona research station.

(ii) Development and dissemination of high yielding and disease tolerant cassava varieties

- On farm trials (participatory variety selection) comprising five 5 pre-release cassava clones (01/1206/75; MM 98/3567; Ndamirabana/7; RWACASS-016-01; Gahene/2) were planted in farmer's fields in 8 cassava growing Districts (Nyamasheke, Nyanza, Ruhango, Kamonyi, Bugesera, Nyagatare, Gicumbi and Gakenke).

2.2.2. Sweet potato Sub-program

17 selected varieties were multiplied with more focus on orange-fleshed sweetpotato rich in vitamin A, which are Cacearpedo, Vita, Kabode, Terimbere (RW11-2560), Ndamirabana (RW11-2910) and Gihingamukungu. In total, 10330 plantlets were hardened from TC. 64,800 cuttings (pre-basic) and 13 millions of cuttings (basic) were multiplied and availed to DVMs and farmers, respectively. Fifteen (15) new OFSP varieties were introduced from Mozambique for evaluation and test tasting. 95 DVMs were trained in agronomic practices and quality seed production.

2.2.3. Irish Potato sub program

The potato sub-program has carried out various trials including National performance trials of new five pre-released potato clones (CIP393280.64, CIP393371.58, CIP393077.159, CIP396018.241, and CIP398190.615).

The fiscal year 2017-2018, the in vitro tissue culture has produced 2,126,577 potato plantlets including 572,216 plantlets for mother plantlets and potato germplasm conservation, and 1,554,361 plantlets for most popular released potato varieties in Rwanda. In addition to plantlets sold to private seed multipliers holding greenhouses, the remaining plantlets have been used to produce 3,576,000 minitubers through conventional greenhouse, aeroponic greenhouse and direct transfer of plantlets under field conditions. These minitubers produced can cover 72 ha for pre-basic seed production.

2.3. Horticulture Program

Production of clean seed of Tamarillo: Large plantations of tamarillo, totalising 7 ha, were established in RAB centres of Ntendezi, Gishwati, Kinigi, and Rwerere. As result, a total of 50 kg of seeds was distributed in major production districts of tamarillo, which can cover 1,650 ha when planted. The districts which received the seeds are: Nyaruguru, Nyamagabe, Kamonyi and Nyanza in Southern province, Gakenke, Gicumbi, Rulindo, Burera and Musanze in Northern Province and Rusizi, Nyamasheke, Ngororero and Rutsiro in Western province. The highest disease control on leaves was observed with Daconil and Copper Hydroxide, which reduced the disease incidence to 20% and 25% respectively as compared to the control with 56%.

Horticulture technology transfer: Horticulture Centre of Excellence

The Rwanda-Israel Horticulture Center of Excellence (HCoE) is a bilateral initiative between the Government of Rwanda and the State of Israel. The HCoE provides a suitable platform for a rapid transfer of knowhow on modern Israeli agro-technologies and agricultural best-practices to farmers namely the production of vegetables using improved varieties in greenhouses, walk-in-tunnels; net house and open areas, the use of modern irrigation systems and fertigation, and their adaptation to local conditions and the farmer's requirements.

From October 2017, the Centre started the production and selling of different improved varieties of vegetables from Israel such as tomatoes, sweet and hot peppers, onions, cabbages, brocolli, cauliflower, eggplants, zucchini, cucumbers, watermelon, melon, basil and herb varieties are the milestones so far achieved. As a result of these demonstration fields, more than 12 vegetables varieties are tested and 90 tons of vegetables harvested are sold to the local market.

The project team and MASHAV experts provided training to 67 extension staff from different stakeholders. It's also in this context that more than 300 farmers and investors received informal training through the study tours in the Centre of Excellence and some of them are linked with irrigation kits suppliers and also with the seeds companies.

2.3.1. Banana program

Banana research and technology transfer activities focused on germplasm conservation, introduction of new varieties, seed production, banana rehabilitation and disease control. To keep local germplasm diversity for future breeding, banana research maintained two field germplasm collections with 111 and 117 varieties in Rubona and Ngoma, respectively. Twenty-nine new cooking banana varieties were introduced from the National Agricultural Research Organization, Uganda and IITA that had developed them from breeding using East African banana parents. Varieties included three PITA-s and 26 NARITA-s series that have good cooking quality attributes. A field experiment was established in Rubona to evaluate their yield potential. Limited seed production of suckers was done. A total of 5,000 suckers was produced in Rubona and disseminated to farmers in the Southern Province. About 80 seed multipliers were involved in certified seed production, mostly in Eastern Province. They have the capacity to provide about 140,000 suckers from their banana fields. Disseminated varieties included Injagi (cooking), Mpologoma (cooking), FHIA 17 (cooking and dessert) and FHIA 25 (juice).

Banana rehabilitation was done for more than 5,000 ha through district and sector support and organization of banana rehabilitation campaigns, mainly through Army week activities. Banana wilt, the most serious and epidemic banana disease, was controlled through organization of banana wilt control campaigns with support from districts and sectors. A total of 21,000 farmers were involved in banana wilt control campaigns.

2.3.2. Pulse and oil program

a. Bean subprogram

Table10: Newly generated early, advanced and elite materials under on-station and on-farm participatory evaluation

Trial or nursery	Bush	Climber	Total
NTPs, Pre-releases and on-farm adaptability trials	15	23	38
Advanced Yield Trial (AYT)	22	91	113
Other nurseries			385
Maintenance nursery			379

b. Soybean sub-program

Among the 354 lines introduced, 42 lines performed well and were selected for yield evaluation in 2018 B seasons. From these 42 lines, 25 best performing were selected for further evaluation in 2019 A seasons.

With regard to rhizobium production, 50 indigenous rhizobia strains originating from major common bean and soybean growing areas in Rwanda have been isolated and characterized. Ten (10) indigenous rhizobia strains were first tested and compared with the commonly used USDA 110 (exotic strain).

A total of 3,482 packs of rhizobia inoculants for both bean and soybean were produced and used for research and sold to bean and soybean growers. In both seasons A and B, the subprogram produced 293 kg of breeder's seeds, 2,167 kg of pre-basic seeds and 15,291 kg of basic seeds. In total, 100 soybean farmers and seed producers were trained in classrooms and at demonstration plots established in big consolidated sites at Kayonza, Gatsibo, Nyagatare and Ngoma.

2.3.3. Industrial Crops

a. Coffee sub-program

For the 2017/2018 fiscal year, research activities under the coffee sub-programme were centered on research projects aiming at mainstreaming climate change into the coffee sector.

i) All coffee growing zones also showed a high level of antestia bug populations (more than 3 bugs per tree on average). The stem borer of coffee was prevalent, mostly, in Eastern Province. Climate change adaptation practices including, mulching, shading, pest and disease management, erosion control, and organic and inorganic fertilization were applied at a low level.

i) Five out of eleven F1 hybrids that were developed in 2012 have been evaluated for field performance. These hybrids are: BM139x6A, BM139XRUIRU11, BM139X5A, BM139XBATIAN, Jacksonx6A, Jackson x 5A.

ii) Basic-seed multiplication. For 2017/2018, seed gardens for released varieties were maintained. 200 kg of a newly released RABC 15 variety were produced and supplied to farmers. This amount can produce 600,000 seedlings and plant around 240 ha. On the other hand, 2,500 kg of clean seed from traditional varieties (BM139 and Jackson 1257) were produced and supplied to farmers. This amount of seeds can produce 7,500,000 seedlings and plant around 3,000 ha of land.

b) Tea clones evaluated for yield and quality under different growing locations

i. Evaluation of newly introduced clones

The aim of the activity was to evaluate the adaptability of tea clones UTK 9710342, UTK 9400247 and UTK401658 newly introduced to Rwanda by Unilever Tea Company in December 2016 and

which were planted on field at Kibeho and Munini in October 2017 (Season 2018 A). The two sites were distant of about 10 Km.

ii. Progress

The first evaluation was done at 6 months after plantation and consisted of collection of tea growth parameter data, including plant height, stem girth, branch and leaf development. The new clones were planted along with locally adapted clones, namely TRFK 31/8, TRFK 11/4 and TRFK 6/8. Field data collection was done at Munini site only as the field comprised all three local tea clones. The area planted with tea covered 35 ha at the two sites. Data were taken considering three replicates under CRD within a radius of 1 km with assumption that soil heterogeneity in the area was not significant.

Assessment showed that UTK 9710342 was most performing (well established and highly branching) of all evaluated clones.



Figure 2: Status of young tea (6 months old) growing at Munini (Nyaruguru) site.

UTK401658 was averagely performing on the same level as TRFK 31/8, TRFK 11/4 and TRFK 6/8. Clone UTK 9400247 had not survived from the nursery and was not planted on field. Current observations confirm previous (2016/2017 and early 2017/2018) nursery assessment whereby evaluation had showed that the tea clone UTK 9710342 was highly performing compared to those that were locally adapted such as TRFK 31/8, TRFK 11/4 and TRFK 6/8 raised in the same nursery. The clone UTK 9400247 had shown very poor performance in the nursery.

2.3.4. Cross cutting programs

a. Genebank Programs

In the context of the conservation of plant genetic resources (PGRs), the following was achieved: (1) passport data for 43 collected plant genetic resources were entered into computer for better management, (2) 48 accessions of different plant genetic resources (2 accessions of rice; 2 for

maize; 2 for wheat; 2 for sorghum; 20 for beans and 10 for taro), were explored and collected, (3) 19 identified plant genetic resources were planted in their appropriate chosen sites at Rubona; Karama and Rwerere for characterization, seeds increase and regeneration, (4) 104 accessions of banana; 24 accessions of horticulture crops; 171 accessions of sweet potato and 201 of coffee were maintained as field genebanks, (5) 192 and 209 different plant genetic resources were respectively tested for moisture content and germination rate. For forest genetic resources conservation (FGRs), 15 forest genetic resources were collected and conserved. For animal genetic resources conservation (AnGRs), 37 inkungu (traditional cows without horns) and 145 “Inyambo” (traditional cows with long horns) were kept for conserving traditional cow breeds and two “Inyambo” young bulls were acquired, cared for and trained for semen production in replacement of the previous old ones.

b. Biotechnology Program

The biotechnology program conducted research for development a long plant tissue culture, plant disease diagnostics and disease surveillance. In tissue culture, two main activities were carried out: 1) Optimization of protocols for production, *in vitro*, of some important crops and 2) mass production of disease free planting materials whose *in vitro* regeneration protocols were concluded in the previous years. Specifically, two protocols optimized were for cassava (mainly the newly introduced clones) and coffee hybrids. In the process of optimizing cassava protocol, 76,849 plantlets were produced and 18,419 plantlets were produced while optimizing coffee hybrids. Clearly, these numbers indicate that the protocols are ready, and amenable, for *in vitro* mass production of the respective crops. Mass production of plantlets using previously developed protocols yielded 59,420 plantlets of banana and 62,409 plantlets of sweet potato. All these plantlets are later subjected to macropropagation by the respective commodity programs to obtain large quantities of planting materials for dissemination to farmers.

c. Soil and Water Management Program

During the fiscal year 2017-2018, the program came up with promising site-specific fertilizer formulas recommended for increasing productivity and profitability of rice, maize and Irish potato by taking into account macro and micronutrients. Fertilizer formulas were blended and used for establishing demonstration trials in different sites of the country to serve as learning sites for scaling out. The purpose of the demonstration trials was to create awareness of the performance of balanced blended fertilizers against the commonly used fertilizer recommendations. In this line, a total of 200 demonstration trials were established in 2018A across the country and farmer and other stakeholder evaluations of the performance of the demonstration trials were collected through organized field visits.

The findings from demonstration trials of blended RAB developed formulas on Irish potato, rice, and maize have shown high yield performance due to a combination of macronutrients and micronutrients. The Value Cost Ratio of these fertilizer formulas has shown that they can generate a profit to the farmers. Although addition of secondary and micronutrients requires more capital investment, it's induced high yield lead to profitability which compensates the allocated investment. The evaluated RAB blended fertilizer formulas and their relative suitability for potato were $13\text{N}-26\text{P}-18\text{K}+3\text{S}+0.3\text{Zn}+0.1\text{ B}+0.1\text{ Cu}$ in volcanic soils (Musanze, Nyabihu and Rubavu) and $13\text{N}-26\text{K}-18\text{P}+3\text{S}+0.3\text{Zn}+0.1\text{ B}+0.1\text{ Cu} + \text{dolomite}$ in non-volcanic soils (Rulindo, Burera and Gicumbi, Nyaruguru and Nyamagabe). For rice the blend fertilizer formula $12\text{N}-20\text{P}-20\text{K} +5\text{S} + 0.3\text{ Zn} + 0.2\text{B}, 0.2\text{ Cu}$ is suitable for marshlands of Eastern and Southern and the formula $12\text{N}-20\text{P}-20\text{K} +5\text{S} + 0.3\text{ Zn} + 0.2\text{B}$ is appropriate for Bugarama in Western Province. For maize the formulas $18-33-0-6\text{S}-0.4\text{Zn}-0.2\text{B}-0.2\text{Cu} + \text{dolomite}$ is suitable in southern province (Nyanza, Ruhango, Muhanga, Gisagara, and Kamonyi districts) and Eastern province while the formula $13-24-16-4\text{S}-0.3\text{Zn}-0.2\text{B}-0.2\text{Cu} + \text{dolomite}$ is suitable in Nyaruguru district. In volcanic soils, the formula $18-33-0-6\text{S}-0.4\text{Zn}-0.2\text{B}-0.2\text{Cu}$ was found performing well while in non-volcanic soils (Gakenke, Rulindo, Burera and Gicumbi) and west province (Ngororero, Rutsiro, Karongi, Nyabihu, Rusizi) the formula $13-24-16-4\text{S}-0.3\text{Zn}-0.2\text{B}-0.2\text{Cu} + \text{dolomite}$ is the most suitable.

During farmer field days organized in different agricultural zones of the country, participants especially farmers appreciated the efficacy of these fertilizers on increasing crop yield and expressed the need for their availability on the market. Based on the findings on demonstration trials and on-farm observations during farmer field days, it was recommended to:

- facilitate farmers access to the RAB fertilizer recommended formulas;
- facilitate private sector to invest in fertilizer blending industry in Rwanda;
- stimulate farmer demand through wide-scale demonstrations of improved formulas while supplying these fertilizers to farmers;
- upscale the products for wide number of beneficiaries;
- accompany the dissemination of the products with further research on technology behaviour, its adoption and farmers perception;
- develop and avail fertilizers formulas for other crops

d. Agroforestry Program

During the fiscal year 2017/18, the role of agroforestry in improving crop productivity was sought through 421 farms trials established in Bugesera, Nyabihu and Rubavu district. These trials included 138 tree biomass incorporation trials, 103 soil conservation trials, 122 trials of wood stakes for climbing beans and 58 trials of fruit species for food and income generation. Of the farmers participating in the farm trials, profiling was made for 120 famers.

Towards scaling up and out appropriate agroforestry options, communities were mobilized to implement agroforestry through sensitization meetings and Umuganda. Three Innovation Platforms (IPs) were established in Bugesera and cross learning activities between new IPs and pre-existing ones were initiated. Nearly 5,343 households were incentivized through the supply and planting of nearly 200,000 tree seedlings and 37,500 improved fruit tree seedlings supplied from managed Rural Resource Centres and satellite nurseries. Awareness campaigns on the role of agroforestry for improved food security and resilient livelihoods were conducted targeting smallholder farmers. In Bugesera, nearly 2,542 farmers (1,444 males, 1,098 females) were reached out. In Nyabihu and Rubavu, 565 farmers were sensitized through Umuganda and 155 farmers (comprising 82 males and 73 females) attended training sessions on agroforestry.

2.4. Animal resources research

For the fiscal year 2017/2018 livestock has focused on three (3) components: Reproductive performance of Ankole cattle and its crossbreds in Rwanda; Milk production and lactation length of Ankole cattle and its crossbreds in Rwanda; Evaluating the success rates of Embryo transfer in recipient cows under field conditions in Rwanda.

2.4.1. Reproductive performance of Ankole cattle and its crossbreds in Rwanda

The study was done to assess the reproductive performance of Ankole cattle and its crossbreds with Friesian (F), Jersey (J), and Sahiwal (S). The traits (number of records) studied were calving to first insemination, CFI (797); calving to last insemination, CLI (797); conception rate, CR (4354); number of inseminations, NINS (936); and calving interval, CI (259).

The observations and least square of the conception rate showed an improving tendency across years and was within acceptable levels, an indication of gradual improvement in the herd performance. Although compared to other breed groups, purebred Ankole had longer CFI, CLI, and CI; intervals for these traits were longer than desirable for all breed groups. This result was obtained from the following crossbreds:

2.4.2. Milk production and lactation length of Ankole cattle and its crossbreds in Rwanda

This study was to assess the daily milk yield (DMY), 100-day (MY100) and 305-day (MY305) milk yields, and lactation length (LL) for purebred Ankole and their crossbreds, and influence of environmental factors on these traits.

The results obtained, indicate that breed group effect was significant for all four traits studied. The breed group AA significantly differed from all crossbreds with lowest milk yield and longer (albeit not significantly) lactation length. Among the crossbreds there was no significant difference between AF, AJxS and ASxJ, nor between AS and ASxS.

The better performance of AF, AJxS and ASxJ is perhaps due the higher milk production potential of Holstein Friesian and Jersey, thus the crossbreds with Ankole excelled both due to heterotic effect and additive effect. From this study it can be concluded that, Ankole × Friesian and Ankole × Jersey crosses can be beneficial even under a management system of limited nutrition in Rwanda.

2.4.3. Evaluating the success rates of Embryo transfer in recipient cows under field conditions in Rwanda

The success rates within the MOET industry, as measured by the mean number of embryos recovered per donor or by conception rates following embryo transfer, have changed very little over the years. In the present study, fresh embryos were non-surgically produced in the cattle genetic improvement research farm at Songa station. Then, the imported Jersey frozen embryos were also used with the purpose of fresh and frozen-thawed embryo transfer in two different sites (RAB-Songa station and Nyanza small holder farms in the southern Province of Rwanda). The experiment was involving 88 recipient candidates, where 51 successfully received the embryos, on a period of 4 months.

CHAPTER 3: LIVESTOCK, FISHERY AND AQUACULTURE

3.1. National Livestock Population

The population for cattle has slightly increased by 2.4 percent between 2014 and 2017. The cattle population reduced by 4 percent from 2016 to 2017. Goat and pig population has been on an increasing trend between 2013 and 2017, where goat population increased by 13.75 percent while that of pigs increase by 30.90 percent, for the same period. From 2016 to 2017, goat population increased by 12.2 per cent while pig population increased by 1.9 percent. Rabbits and poultry population also increased between 2013 and 2017, by 21.9 percent 9.79 percent, respectively. However, between 2016 and 2017, rabbit population decreased by 2.9 percent. Sheep population recorded a continued decline, where from 2013 to 2017, it decreased by 20 percent.

Table: 11 Trend of Animal population by type (2010-2017)

Category	2010	2011	2012	2,013	2014	2015	2016	2017	2018
Cattle	1,334,820	1,143,231	1,135,141	1,138,799	1,165,835	1,349,792	1,214,244	1,166,187	1,293,768
Goats	2,688,273	297,078	2,672,751	2,570,275	2,532,277	2,706,382	2,605,780	2,923,706	2,731,795
Sheep	769,937	828,836	807,392	829,638	630,860	716,309	637,068	664,703	601,836
Pigs	684,708	706,472	989,316	1,311,250	1,014,629	1,492,506	1,684,709	1,716,438	1,330,461
Rabbits	792,895	864,696	993,685	1,105,750	1,203,485	1,354,703	1,387,669	1,347,860	1,264,734
Poultry	3,537,608	4,420,764	4,687,984	4,802,764	4,916,837	4,837,794	5,238,497	5,272,725	5,442,152

Source: MINAGRI, 2017

As shown in table 11 above, in 2018 there were 1,293,768 cattle. The country counts 2,731,795 goats, 601,836 sheep, 1,330,461 pigs, 1,264,734 rabbits and 5,442,152 poultry (layers, broilers and indigenous chicken).

3.2. Livestock policy, strategy and regulatory framework.

In 2017-2018 fiscal year, a Livestock Sector Development Framework (LSDF) that provides a skeleton for the Livestock Sector Analysis (LSA) were developed, and followed by developing a **Livestock Sector Analysis (LSA)** which constitutes a long-term 15-years sector modernization strategy for the sector, and then, the LSA provided the basis for 5-year targeting and scenario analysis of investment intervention options (both policy and technology) in the **Livestock Master Plan (LMP)**. The Livestock Master Plan (LMP) is a series of five-year investment roadmaps that guide the Ministry of Agriculture and Animal Resources (MINAGRI) to implement national programme to further modernize and transform the Rwandan livestock sector.

The LMP sets out the strategies, activities and investment budgets for better genetics, feed, and health services, as well as complementary policy support, which could help meet the national development plan targets and development objectives of Rwanda by improving animal productivity and total product output in the key livestock value chains for cow dairy, red meat-milk, poultry, and pork, as well as by contributing more substantially to national income and GDP.

The LMP proposed investment is about USD 310 million over the 5-year LMP period of 5 years, with 48% coming from the public sector and 52% from private sector investors.

The LMP stated that, if successfully implemented, the resulting further intensification of the sector could have substantial positive livelihood impacts on livestock keepers by both increasing their incomes and the food and nutritional security of their households.

Moreover, the success of the LMP is critical to the achievement of food security at the sectorial and national levels in Rwanda. Beyond very positive impacts on rural people, the anticipated transformation of the livestock sector has the potential to also impact very positively on urban consumers through more and better-quality animal source foods and lower prices of animal food products. Thus, as well as contributing far more substantially to national income or GDP, the success of the LMP is thus critical to the achievement of greater food and nutrition security at household, sectorial and national levels.

3.3. Bovine genetic improvement

3.3.1. Brief description

The bovine genetic improvement is carried out with a view to ensure the availability of quality and genetically superior breeding germplasm; management and replacement of the bull stud (Masaka bull station); bovine semen collection and processing; Liquid Nitrogen production and facilitating the availability of artificial insemination (AI) inputs; Capacity building of AI stakeholders on bovine artificial insemination, cattle reproductive management and AI inputs handling (especially, Liquid Nitrogen); and Facilitating and supervising the cattle artificial insemination across the country.

3.3.2. Management and replacement of bull stud

The National Bull station hosts a team of around 13 best bulls selected to produce semen in order to ensure fast dissemination of superior genetics and faster genetic improvement and conservation of local breeds. In the fiscal year 2017/2018, 2 young Inyambo bulls acquired to be trained on semen production to strengthen Inyambo germplasm conservation. The young

bulls will replace 3 old bulls culled. The usual work focused on management of bulls and training of young bulls on mounting to teaser bull or dummy cow and semen production. Young bulls acquired in Ireland last year were trained and 2 have successfully started producing quality semen. The Simmental bull is still under intensive training.

3.3.3 Semen, Liquid Nitrogen and other inputs production

In FY 2017/2018 a total of 69,715 semen doses were produced, processed and stored. To ensure accelerated genetic improvement, a proportion of bovine semen used in Rwanda is imported mainly for farmers to benefit from higher genetics of bulls of higher genetic merit “Super bulls” and to increase the genetic diversity of our breeding stock. Through partnerships between RAB, Jersey Island, Send a Cow, Bothar and MSAADA a total of 68,101 semen doses (58,101 doses of Jersey and 10,000 doses of Holstein-Friesian) have been imported in 2017/2018.

To ensure availability of Liquid Nitrogen (LN2) and increased access to AI inputs for improved service delivery, RAB through Rwanda Dairy Development Project has acquired and operationalized a second Liquid Nitrogen Plant which was installed in Rubona RAB station, Huye District. This plant has the capacity to produce 20 litres of LN2 per hour and will solve the issue of shortage of LN2 and improve its access, especially for Southern and Western Provinces. Also, modern laboratory equipments have been acquired to improve semen production and quality.

3.3.4 Artificial insemination and capacity building

Bovine Artificial insemination (AI) is the best and safe mean of cattle reproduction. In the 2017/2018 fiscal year, a total of 104,373 cows were inseminated and 41,873 calves born registered. This fiscal year, there was an increase of 35% in insemination and 52% of calves registered compared to the previous year. This improvement was mainly due to significant efforts invested in availing liquid nitrogen (a new plant installed); training of more inseminators; availing different inputs to technicians and training of farmers via RDDP project and other partners such other Send a Cow, Heifer International Rwanda, Jersey Island, Bothar, MSAADA, etc.

Every year, RAB and partners organizes training for new AI technicians on cattle artificial insemination and reproductive management as well as refresher courses to improve the skills of existing inseminators. This is to address the challenges of low success rate of AI and low coverage which are known in cattle AI. In this fiscal year, 206 animal sciences technicians have been trained on bovine artificial insemination technique and qualified as Inseminators. Also, existing 168 AI technicians have been given refresher courses on PD and best practices in bovine artificial insemination.

3.4. Animal Health improvement

3.4.1 General context

The boundaries of Rwanda are very porous allowing easy movement of animals in and out of the country and this predisposes the country to introduction of transboundary animal diseases such as Foot and Mouth Disease (FMD), Contagious Bovine Pleuropneumonia (CBPP), Rift Valley Fever (RVF), and Brucellosis among others. The status of these transboundary animal diseases including zoonotic diseases is as follows;

- The country was declared free from Rinderpest in 2006 by World Organization of Animal Health (OIE) and from then has the same status;
- There has been no clinical cases of Contagious bovine pleuropneumonia (CBPP), Pest of small ruminants, African Swine Fever (ASF) and Highly Pathogenic Asian Avian Influenza (HPAI) in the country since 2010;
- During 2017/2018 fiscal year, we noted an upsurge of RVF affecting Cattle, Sheep and Goats in Kirehe, Ngoma, Kayonza and Rwamagana Districts in the Eastern Province; Kamonyi and Muhanga Districts in the Southern Province; Gakenke, Rulindo and Gicumbi Districts in the Northern Province;
- There has been no clinical cases of FMD during 2017/2018 fiscal year, however, vaccination was done to continue enhancing immunity of cattle that were exposed to the disease in previous year in the Districts of Nyagatare, Gatsibo, Kayonza and Kirehe in Eastern Province;
- The sero-prevalence of bovine brucellosis on the whole national cattle herd is 0.7%, the highest prevalence is found in the Eastern Province and more particularly in Nyagatare District with a rate of 3.5% when the prevalence in Goats, Sheep and Pigs is still at 0%;
- The sero-prevalence of RVF was 7.9 % in Cattle;
- The prevalence of Mastitis in Cattle in Rwanda is 67,4%;
- In 2017/2018 financial year, the prevalence of Theileria parasites was 1.5%;
- Trypanasoma parasites prevalence of 0.0% was recorded in cattle around Akagera River and 9% in Canine;
- Anaplasma and Babesia were not detected in any of the submitted samples;
- The prevalence of helminthes in cattle was 24.5% and 38.3% in small ruminant;

3.4.2 Control of transboundary animal diseases

- The control of transboundary animal diseases (TADs) is an activity that was taken on from the financial year 2017/18, the country made significant progress in controlling TADs. Those of interest include lumpy skin disease (LSD), African swine fever (ASF), peste des petit ruminants (PPR) and contagious bovine pleuropneumonia (CBPP). World Animal Health Organization (OIE) progressive control pathway staging of FMD status in Rwanda is stage 3 on 5-stage pathway and the country is set to apply for certification to stage 4.
- During 2017/18, 165,000 cattle around FMD high risk areas were vaccinated. These areas include districts bordering Tanzania and Uganda; and among these are; Kirehe, Kayonza, Gatsibo and Nyagatare districts. Outbreaks of LSD were reported in various districts and 655,713 cattle were vaccinated, 510,550 heads of cattle were vaccinated against black quarter in endemic area

3.4.3 Control of zoonotic diseases

- Rwanda has had different zoonotic diseases incidences of which some have become endemic and pose a big threat to the public. These include Brucellosis, Rift Valley Fever, Rabies and cysticercosis.
- During this FY 2017-2018, we note an upsurge of rift valley fever affecting cattle, sheep and goats in Kirehe, Ngoma, Kayonza and Rwamagana districts in the Eastern Province; Kamonyi and Muhanga in the southern province; Gakenke, Rulindo and Gicumbi in the Northern Province. 163 deaths of cattle and small ruminant and 308 abortions due to RVF were registered. 295,220 cattle, sheep and goat were vaccinated and 457,853 were sprayed using Permapy+ done in aim to control the spread of the disease in all the affected areas
- Since the disease is known to be transmitted by mosquitoes, livestock reared near large expanse swampy areas were considered to be at high risk. Along the Nyabarongo, Akanyaru, Akagera and Muvumba rivers in the all Nile basin.
- In this FY 2017-2018, 2,450 human dog bites were registered, vaccination of 10,705 dogs/cats against rabies and culling 2,792 stray dogs were done
- In order to control the brucellosis, 101,630 young female cattle (4-11months) were vaccinated and the sero-prevalence of bovine brucellosis on the whole national cattle herd is 0.7%, where the highest prevalence is found in the Eastern Province and more particularly in Nyagatare District with a rate of 3.5% when the prevalence in goats, sheep and pigs is still zero.

- For the cattle in particular, 616,892 were vaccinated against Black Quarters, 761,593 vaccinated against LSD, 38,029 vaccinated against Brucellosis, 57,167 vaccinated against RVF and 142,557 vaccinated against FMD.
- In addition, 1198 Community animal health workers were identified trained and equipped with the basic veterinary kits that help them to execute animal diseases control.

Table.12: Causes of animal death registered during 2017-2018 FY

Causes	Cows	Goats	Pigs	Poultry
Drought/ Heat	311	55	-	-
Flood	-			-
Road Accidents	44	107	-	-
Landslide	137	269	-	-
Dog bites	12	36	-	-
Disease				
Foot and Mouth Disease	-	-	-	
Rift Valley Fever	163	52		
Rouget du Porc			62	
Tick borne disease (ECF, etc)	2,622	414		
Lumpy Skin Disease	14	-		
Newcastle, variole, salmonella	-	-	-	5,375

3.4.4 Control of movement for Animal and animal products

Control of animal movement is one of the control measures put in place by veterinary services to control transboundary animal diseases and is mandated to issue out permission to allow movement of the animals listed below.

Table 13 Control of animal movement both live and animal products

Species/Item	Import	Export
Cats	73	60
Dogs	271	208
Cattle	2652	170,862
Goats and Sheep	1763	218,604
Pigs	-	154,572
Hides and Skin		12, 706 T
Eggs and Day old chick	987,560 DOC	3,175 T eggs
Fish	8,867 tones	10,000 T

In addition, 187,3050 cattle, 248,000 small ruminants and 183,692 pigs were identified for sale in the livestock markets; 3180 movement permits books for large and small animals were produced and distributed to different districts in the country. Furthermore, out of six border and quarantine posts in the country, only four are operational.

In order to regulate the veterinary drugs, the veterinary services issues out importation permits, to allow them to be imported into the country. In relation to this the veterinary services issued out 237 importation permits for importation of different veterinary drugs including among others; antibiotics, antiparasites, anti-inflammatory drugs, minerals, vitamins; hormones, vaccines; 35 importation permits for 2,750 T of animal feeds and feed additives, 174 permits for fish farming materials and 5 permits for bee keeping equipment.

3.5. Animal feeding

3.5.1. Improved forage establishment

Forage cultivation is important to improve animal nutrition .Increase farm’s forage productivity is also essential to cope with climate change challenges. During the 2017/2018 financial year, 813.5 hectares of improved forage varieties (forage seeds multipliers) were established. Farmers changed their mind-set and were willing to establish new plots to cope with fodder scarcity during the dry season. 393 FFS groups have been formed and established forage plots as their main core activity for feeding trials and forage seeds pass on in between LFFS group members; and 7,244 livestock farms were cleared and fenced in Nyagatare and Gatsibo districts.



Figure 3: Forage multiplication FFS groups

3.5.2 Forage conservation

In order to cope with prolonged drought during dry season, farmers were trained on forage conservation techniques and supported with plastic silage tube to be used for silage making. 933 Farmers trained on hay and silage making, crop residues treatment and conservation. The districts reached are Gatsibo, Kayonza, Ngoma, Kirehe, Rwamagana and Nyagatare. In total, 1,525.7 tons of hay were conserved, mainly *Chloris gayana*, bush hay, *Sudan grass* and bean straw.



Figure 3: Forage conservations

3.5.3. Water for livestock

During 2017/2018 financial year; 39 dam sheets distributed and 3 boreholes were constructed for rain water harvesting and use of ground water to cope with the lack of drinking water for animals during the dry season.



Figure 4: Dam sheets being put in a valley dam to be filled with water

In addition, 13 water tanks were constructed in Nyagatare (6), Gatsibo (1) and Kayonza (6) to provide water for livestock. Water tank construction was found to be a solution as when the dam fills up, they hold a lot of water that can assist livestock for a long. Another innovation to avail water for livestock was getting it from the Akagera River where at Karushuga in Rwimiyaga sector, Nyagatare district water for was obtained through a trench passing under the RDB electric fence and collecting it in a small well that would be pumped into drinking troughs and this facility helped farmers to water over 1,200 heads of cattle per day during the dry season. A similar trench measuring 58 km and crossing Rwinkwavu, Gahini Mwiri and Murundi sectors of Kayonza District was constructed from Kadiridimba to Mucucu ku cya Musenyeri and this facility provided water for more than 3,000 heads of cattle.

3.6 Gako beef Project

Gako integrated Beef is an intensive beef production project which is being implemented in partnership with private sector. It is located in Bugesera district which its main objective is to produce meat of good quality and quantity to meet the national consumption demands and also for international exports. The project consist on the farm land preparation through bush clearing and establishment of forage plot; set up irrigation water supply infrastructure on 2,377 ha, drilling of 9 boreholes to provide water for cattle; construct electric power line for both water intake and other field farm activities, slaughter infrastructure construction and 53 km of feeder road to ease access and transportation. The table below shows the implementation status of key activities under Gako beef project.

Table 14. Implementation status of Gako project

No	Key activities	Status
1	Farmers mobilization to introduce cattle in the farm	13 farms established 2,977 head cow was introduced
2	Set up irrigation water supply infrastructure	DPR completed, Delivery pipeline /Rising pipeline completed, water intake under completion, equalizing tanks
3	Establishment of project access and feeder roads	53 km completed
4	Drill of bore hole	4 out of 9 completed

3.7. Operationalization of Milk collection Centers in the country

3.7.1 Brief description

Milk Collection Centers were constructed to help farmers to collect bulk and sell their milk in order to generate income and avail milk to other parts of the country. Currently, Milk Collection Centres are categorized into 3 categories:

- **Category 1:** The MCCs have more than one service provided to dairy farmers and milk collection, cooling and selling is done well. Additional services provided are such as having: a vet pharmacy, forage seeds, AI services, etc
- **Category 2:** The MCCs that have no more than providing the service of milk collection, cooling, and selling.
- **Category 3: MCC qualified as “not operating”** MCCs that started operating and due to different reasons like poor roads, poor management stopped to work

3.7.2 Key Achievements in the operationalization of MCCS

This fiscal year, 37 MCCs were transformed into Dairy Hub models and now out of 116 MCCs, 92 MCCs are now into Dairy Hubs model; 13 additional MCCs were connected to 3 Phase Electricity by PASP Project, and a total of 84 MCCs are connected to 3 phase electricity; 4,072 milk cans and 7 coolers including 110 alcohol guns were distributed to milk collection centers; 100 Milk collection points were constructed across the country.

59 Young graduates entrepreneurs (MCCs Associates Managers) under Rwanda Youth in Agribusiness (RYAF) were recruited and deployed to support operationalization of Milk Collection Centre , this has helped to increase quantity of milk collected at MCCs and milk supplied to milk processing plants as well (66,508,107 liters of milk were supplied to dairy processing plants in 2017-2018); 22 dairy business plans totalling 1,807,586,364 Rwf on milk collection, processing and transportation have been developed and financed. The table below indicates a list of dairy business plan developed and financed:

Table 15: List of dairy business plan developed and financed

No	Business promoters	Project description	Total cost (Rwf)
1	Ayera dairy muhoza	Milk buying and selling	35,699,493
2	Nyabihu processing(zigira john)	Milk Processing Project	199,746,398
3	Coopeka	Truck -Transport	56,432,506
4	Rwabiharamba dairy farmers	Truck	47,402,588
5	Haji enterprise	Milk processing Plant	322,670,000
6	Zirakamwa meza dairy ltd	Milk processing Plant	224,622,880
7	Janvier Mutamba	Truck(Milk Transportation)	29,940,000
8	Rwimbogo Dairy cooperative	Truck	28,000,000
9	Murera Andre	Transport and Milk equipment	31,800,000
10	Muhe farm cheese factory	Milk collection and processing	115,789,376
11	Uruhimbirwizihye cooperative	Milk collection Center	39,533,300
12	Alpha milk co	Transport	148,149,500
13	Njyambere mayaga cooperative	MCC	44,325,000
14	Kamdamaco	Transport facility	38,480,000
15	Terimberemworozi	Business Driven BP	12,944,768
16	Coepromu	Business Driven BP	11,781,600
17	Zirahumuje musheri	cooperative	39,680,000
18	Kidaco	Cooperative Led BP	323,179,495
19	Coega	Business Driven BP	11,810,000
20	Terimbere mworozi	Cooperative Led BP	28,050,000
21	Ntihakose evariste	Private led business Plan	3,049,500
22	Rwabiharamba dairy cooperative	Cooperative Led BP	14,500,000
Total			1,807,586,364

3.8 Animal products

The productions of animal products have been increasing over the years. This is attributed to different programs supporting the development of the livestock sector, mainly the livestock intensification program, Girinka program, small stock development, among others. Through these programs implemented by MINAGRI, Districts and other stakeholders, priority is given to genetic improvement, animal health, animal feeding, and livestock infrastructures development. The table below illustrates the trend of animal products production:

Table 16: Trend of animal products 2010-2018 in MT

Product	2010	2011	2012	2013	2014	2015	2016	2017	2018
Milk	372,619	442,337	503,130	648,395	703,606	731,014	776,284	816,791	847,178
Meat	70,928	73,633	74,519	91,087	118,348	131,366	138,231	152,029	162,470
Fish	15,007	15,526	17,566	24,550	25,450	26,732	26,732	28,705	31,465
Eggs	5,203	5,736	6,324	6,757	6,973	7,347	7,347	7,475	7,936
Honey	2,921	3,221	3,785	4,286	4,585	4,738	4,738	5,105	5,200
Hides & skin	4,072	4,017	3,814	5,207	5,305	5,506	5,506	6,781	6,567

Even though the production of animal products increased over the years, the consumption is still low compared to FAO recommendations as indicated in the table No 17.

Table: 17. Animal products consumption (2010-2018)

Animal product	2010	2011	2012	2013	2014	2015	2016	2017	2018
Milk lt/pers/year	37.3	44.2	50.1	58.1	59.0	63.0	66.2	68	69,4
Meat Kg/pers/year	6.44	6.69	6.95	7.59	10.9	9.7	11.1	12,7	13
Eggs kg /pers/year	0.47	0.52	0.57	0.59	0.60	0.61	0.62	0.63	0.63
Fish Kg/pers/year	1.36	1.41	1.59	1.8	1.9	2.1	2.4	2.62	2.56
Honey Kg/pers/year	0.26	0.29	0.34	0.39	0.41	0.43	0.45	0.47	0.53

Source: MINAGRI, 2017 FAO Recommendation: Milk (220 lt/pers/year), Meat (50 kg/pers/year); Eggs (5.7 kg/pers/year)

3.9 Commercial Insects

3.9.1. Apiculture

Apiculture is recognized as a pro-poor sector to improve households' conditions. Modern beekeeping appeals to women, currently accounting for a small proportion of producers (23.9%) but with great potential to increase.

MINAGRI places particular emphasis on the promotion of beekeeping oriented entrepreneurship and that may play an important role in reduction of rural poverty in particular and the welfare of the Rwandan population in general.

Major Achievement for the fiscal year 2017 – 2018

- **Training of beekeepers on Biology of honey bees,** Honey Production, Safe Handling of Bee Hives, Development of Bee Hive Products, Bees Disease Control and one day meeting on how to boost honey production in Burera and Musanze districts.
- **Training of trainers in bee health and pollination services:** 60 beekeepers representing cooperatives countrywide were trained to control bee diseases and to protect bees during pesticide application. Beekeepers learnt to identify symptoms and to control varroa mites, wax moth, hive beetles, braula, tropilaelaps, American foulbrood, European foulbrood, nosema, chalk brood etc
- **Initiate bee feeding and dissemination of bee feeding techniques:** The bee feeding techniques were disseminated to 40 beekeepers from 9 cooperatives, 30 master

beekeepers were trained on bee feeding techniques, colony splitting and queen rearing.

- The beekeepers were trained how to use dietary supplements like sugar solutions to maximise honey production during honey flow, 150 beekeepers from 12 cooperatives were trained on how to use dietary supplements like sugar solutions to maximise honey production during honey flow.
- **Training of beekeepers on pests and diseases identification and management:** 85 beekeepers nationwide with 40 in west, 15 in South, 15 in east and 15 in North.
- **Training of beekeepers in the use of honey quality equipment:** 85 master beekeepers were trained on the use of honey quality equipment and quality control principle to ensure '*Quality from the hive to the table*'. This was with respect to issues of traceability, hygiene, product handling and equipment used.
- **Developing queen-rearing technologies coordinated:** Two technologies in queen breeding were developed in Ruhande apiary (by using grafting equipment and without grafting materials) and disseminated in 6 cooperatives and 2 beekeeping unions (Nyabihu and Rusizi).

3.9.2 Sericulture

Since 2005, sericulture was formally introduced in Rwanda. It has been practiced by individual farmers and cooperatives wherever the mulberry is grown in various parts of the country. Currently the area covered by mulberry plantation in Rwanda is about 2,281 ha .This fiscal year (2017/18), 397 ha of mulberry were planted against 500 ha targeted and 13.9 MT of cocoons were produced. Characterization of 3 mulberry varieties and 25 silkworm breeds coordinated and 90 farmers were trained on:

- (i) mulberry cultivation and establishment of mulberry garden
- (ii) Saplings preparation, pruning of mulberry trees, harvesting methods of mulberry leaves,
- (iii) maintenance and fertilization of mulberry fields,
- (iv) mulberry pests and diseases control,
- (v) preparation of silkworm rearing and rearing of silkworm,
- (vi) silkworm diseases and pests control,
- (vii) harvesting and handling of cocoons

Sericulture faces many challenges such as lack of adoption of high technology in cocoon and raw silk production, inexperienced farmers involved in mulberry and cocoons production.

3.10 Aquaculture and Fisheries

3.10.1 Brief description of the program

Rwanda is endowed with enormous potential for fisheries production to become self-reliant and even with a capacity to export. Of the 26,338 sq. km, 1,390 is water surface. There are 24 Lakes including 3 shared ones namely Lake Kivu which is shared with the Democratic Republic of Congo (DRC), Cyohoha south and Rweru with Burundi. This sector has shown tremendous progress during the last years whereby fish production increased from 7,100 metric tons in 2007 to 26,732 metric tons in 2014. However this production fell to 22,000 metric tons in 2015 due to increased illegal fishing activities in most of the lakes and the lack of fish feeds which lead to poor aquaculture production. This fiscal year (2017-2018), the sector shifted its fish production from 24,184 MT metric tons in 2016-2017 to 31,523 MT coming from capture fisheries and aquaculture in ponds, dams, pens and cages.

3.10.2. Capacity building and Production of fingerlings

Trainings intended to increase knowledge and skills in fish farming as well as better management of capture fisheries. More emphasis was given to modern farming techniques in cages, pens and ponds. Farmers got trained on ponds preparation, design and construction; fish fingerlings stocking, sampling and harvesting; fish farm management; installation of tilapia incubation systems given by FAO and hatchery operations; monitoring and follow up of cages, legal fishing in lakes. Fishing cooperatives were inspected and this is done every year in all fishing zones. It is aimed to check the fishing boats, fishing nets, fishing licenses, life jackets to limit illegal fishing and to avoid overfishing. Fingerlings production was done at Kigembe Fish Center which is located in Gisagara and Nyaruguru Districts.

CHAPTER 4: NUTRITION AND SOCIAL PROTECTION

4.1. Introduction

The government of Rwanda and its development partners are implementing a range of strategies, policies and program initiatives designed to address nutrition and food security issues through improved food availability, access, utilization, and resilience.

The Ministry of Agriculture and Animal Resources committed to contribute to the reduction of malnutrition through integrating in action plan, nutrition and household food security as a sub-program strategy. Those initiatives include among others: (1) Girinka, which supplies a pregnant heifer to poor rural household to increase access to milk and additional income, (2) One cup of milk per child; (3) The Kitchen gardens (4) mushrooms, (5) Bio fortified beans production.

4.2. Girinka Programme

Girinka implementation has contributed to the increase of milk production, increase crop production and soil fertility through manure production. Additionally, Girinka implementation has enabled beneficiaries to access loans, improved nutrition status, access to the shelter and other equipment, strengthened social cohesion and is a source of income of program beneficiaries.

Girinka Program targets for the FY 2017/18 was 31,405 cows to be distributed to poor households. Through the stride proliferation of distributed cows and tangible support of distinctive stakeholders of Girinka program, the total amount of cows distributed during the fiscal year 2017-2018 is 30,616 against 31,405 with the achievement rate of 97.48 %. The sources of distributed cows are the following : (i) Earmarked fund:9,422 ,(ii)Partnrns:4,828, (iii) Pass on :13,607 and (iv) Local initiative:2,759.

Since Girinka program has started, the data evaluation illustrates that 327,846 cows had been distributed countryside.

Along 2017-2018 fiscal year, an assessment of the impact of Girinka programs was conducted on poor households' welfare, income, food security and nutritional status of under-five children for 1,106 households both beneficiaries and non-beneficiaries. The key finding of this study revealed that the Girinka program increased household income, improved household daily calorie intake per adult-equivalent (food security) by about 14%; to an improved household nutritional status of under-five children by about 58% and 23% respectively for underweight and stunting; and to an increased household annual income by about 129%.

4.3. One cup of milk per child

The One Cup of Milk per Child program aimed to address the problem of malnutrition among school going children and improve their nutrition status while the main components are purchase and distribution of milk to beneficiaries. In 2017/18, MINAGRI had a target to reach 85,965 pupils. A total number of children that benefited from one cup of milk was 95,175 and received 980,921 liters of milk. The high achievement was due to the intervention of new project recently initiated “RDDP” which contributed in milk distribution in additional 12 districts.

4.4. Kitchen gardens

The aim of the Kitchen Garden Program is to address dietary gaps, primarily micronutrient dense foods, through the promotion of a direct food source next to the kitchen. Impact is currently measured by number of gardens established. A total of 2,265,394 households were identified with well-maintained kitchen gardens against 2,100,000 household planned.

In addition to this, MINAGRI in partnership with Agriculture Technical Assistance Facility (Agri-TAF) has developed the Kitchen Gardens and Nutrition Sensitive Agriculture (NSA) guidelines that promote more production and diversified diets at household level through vegetables, fruit trees and small livestock consumption.

4.5. Bio fortification

Following the introduction of iron beans and Orange Sweet Potato, the program is has strengthened the existing seed system by providing training for government seed inspectors and extension workers, farmer-based cooperatives, seed multipliers and agro dealers. These activities helped ensure that the integrity of the national seed system was developed and maintained through production of various seed classes. For the 2017/18, a total of 2,466, 833 Orange’s sweet potato cuttings were distributed for a total area of 56, 11 (Ha) and 772 MT bio fortified beans produced against 1, 000 MT of the targets.

4.6. Small Stock

Livestock plays an important role in providing assets and income to rural households living below the poverty line, for example through the Girinka programme, but also through the distribution of various small-stock and other animals. The government recognizes the position of animal resources and their contributions to reduce poverty and ensuring nutritional security. Small livestock also contributes to farm income, resilience, and enhanced nutritional status of farming families. For the 2017/18, a total of 1,320 pigs and 15,000 poultry were distributed to youth cooperatives in the 4 districts with high rate of malnutrition. This was achieved against the annual target of 1760 pigs and 20,000 poultry.

CHAPTER 5: POST-HARVEST HANDLING, MANAGEMENT AND STORAGE

Improving the performance of the agricultural sector is seen as critical in achieving accelerated economic growth and poverty reduction in Rwanda. Through the CIP, production continues to increase; giving higher yields, sustainability and revenue generation depend on the success of the entire value-chain. Post-harvest activities include harvesting, handling, storage, processing, packaging, transportation and marketing. The main key players in post-harvest operations are the Government of Rwanda, International development partners, farmers' cooperatives, SMEs, private sector, NGOs and rural farmers.

Cutting down post-harvest losses and increasing storage capacity and efficiency is important to expand value chain profitability. Adequate drying, storage and processing facilities are needed to increase and stabilize farmers' incomes, and to preserve the quality of products.

The National Strategic Grain Reserve (NSGR) aims to maximize net profits for smallholder farmers and reduce food insecurity by strengthening staple crop value chains and reducing post-harvest losses. Specifically, Strategic grain reserves in Rwanda are intended as a safeguard against food emergencies. Within the context of using a strategic grain reserve there are two main types of food emergencies: acute food emergencies resulting from when a certain proportion of the population is exposed to external event displacing or destroying their food supplies (such as an earthquake destroying household stocks, or flood washing out a bridge and preventing food to move to a market), or a significant shortfall in production causing rampant inflation in staple food prices.

These different scenarios need different management for instance in the case of a shortfall in the production there is generally a long lead-time of at least 4-6 months when the market is aware of the problem and the prices are climbing in response to the anticipated harvest shortfall. The price may be higher than a proportion of the population can afford. The SGR can then be used to release food to the markets to lower the market price, or to provide food to those who cannot afford to buy.

During the 5 years of PSTA 3 implementation, priority actions were focused on better post-harvest handling, management and storage such as:

- Construction of drying grounds and temporary stores in order to reduce post-harvest losses,
- Construction of modern storage facilities including warehouses and metallic silos,
- Dissemination of post-harvest tools and equipment to farmers' cooperatives in different districts,
- Capacity building of farmers in post-harvest best practices (harvesting, handling, transport and storage).

5.1. Post-Harvest Infrastructures

During 2017-2018 FY, in order to minimize the post-harvest losses, 1175 tarpaulins and 3,183 shellers have been distributed to maize farmers' cooperatives. Public and private media were used to increase awareness of the benefits of post-harvest improvements at the farmer and private sector levels. National Strategic Grain Reserves stock position at end June 2018 were 11,682.5 MT (Maize: 7,571.4 MT; beans: 4,111.1 MT). This amounts to 77.9% of the annual target of 15,000 MT. The details of stock position are summarized in the table 18.

Table 18: Stock status as of 30th June 2018

Warehouse and Silos	Food stored		Total in Mt
	Maize in MT	Beans in MT	
Nyagatare Silos (Musenyi)	7,571.4	0.0	7,571.4
Kicukiro Warehouse	0.0	1,364.5	1,364.5
Nyanza Warehouse	0.0	2,186.0	2,186.0
Nyamagabe Warehouse	0.0	157.2	157.2
Nyabihu Warehouse	0.0	403.5	403.5
Total	7,571.4	4,111.1	11,682.5

Source: NSGR Annual Report, June 2018

Beside what was stored at the National Strategic Grain Reserve, an addition 67.6 MT of grain (14.2 MT of beans and 53.4 MT of maize) was reported stored by MINALOC at District level and 27,315.3 MT of Maize stored by private operators, namely MOVEMENT, EAX, RGCC, SARURA, BABUC, PRODEV/MINIMEX and AIF. The total stored food grain in 2017/18 is estimated at 39,065.4 MT.

Furthermore, we encountered the disaster (drought and flood) that affected different districts across the country, namely: Kayonza, Ngoma, Kirehe, Gatsibo, Nyagatare, Bugesera, Kamonyi, Nyaruguru, Karongi, Ngororero, Rulindo and Burera which resulted in food shortages in some

households. As a response to this shock, the Government of Rwanda through the Ministry of Agriculture and Animal Resources provided food to the families affected with food shortage. In total, 798.2 MT of maize and 504.2 MT of beans were provided to different districts respectively; in Eastern Province (maize: 593.1 MT & beans: 387.8 MT), Southern Province (maize: 65.5 MT & beans: 34.5 MT), Western Province (maize: 73.1 & beans: 41.8 MT) and Northern Province (maize: 66.5 MT, beans: 40.05 MT).

To mitigate the issues of post-harvest handling of Irish Potatoes seeds, seven (7) Irish potatoes storage facilities with 4300 MT storage capacity were constructed in Musanze, Nyabihu, Burera and Rubavu districts.

11 small and medium storage facilities for maize & and beans with 6200 MT storage capacity were constructed in the districts of Musanze (2), Rubavu (1), Ruhango (2), Kayonza (2), Ngoma (4), Gatsibo, Nyanza (2) (1) and 1 Kirehe. The total capacity of storage constructed is estimated to 311,795 MT. Those were either constructed by the Government, privates or farmer's cooperative.



Figure 5: Potato Collection Centers constructed in Rushubi and Gataraga sites, Musanze district, June 2018

5.2. Capacity building on post-harvest operations

Trainings/coaching on maize & beans, Irish Potatoes and cassava post-harvest handling was conducted for 16,266 farmers from 191 cooperatives across the country. These were trained on different topics which include post-harvest best practices (harvesting, handling, transport and storage), market analysis, production/marketing costs and market linkages, entrepreneurship development, cooperative governance and financial management.

CHAPTER 6: AGRICULTURAL EXPORT AND TRADE

The agricultural exports are categorized into traditional exports and nontraditional exports. Traditional exports are Coffee, Tea, and Pyrethrum while non traditional exports consider horticulture (fruits, vegetables and flowers), other diversified agriculture products including also livestock and livestock products. Over the reporting period, the export of agricultural products increased from \$ 356.5 million (FY 2016/17) to \$515.9 million (FY 2017/18) indicating an increase of 45%. The share of traditional agricultural exports represent 31% of the total agricultural exports while non-traditional account for 69%. By commodity performance, cereals accounted for 20% of the total revenues from Agri-exports with the re-export composition of 39% of the revenues generated by cereals, tea accounted for 17% and coffee 13% and Horticulture products (vegetables, fruits and flowers) contributed 4% of the total Agri-export revenues generated.

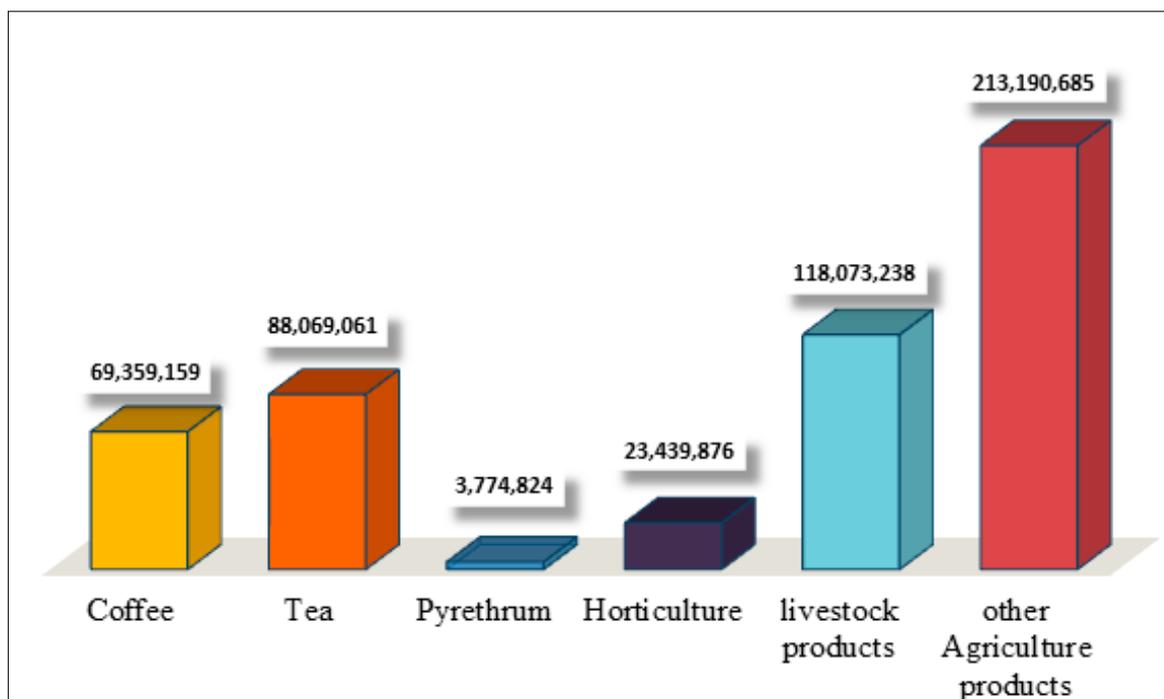


Figure 6: Agricultural exports performance in terms of Revenues (USD)

NB: Other major agriculture products referred in the table above include Cereals, Pulses, Vegetable Cooking oils, Sugar, Roots and Tubers, Oleaginous and Forest products. It takes the largest share of exports due to the re-exportations of commodities mainly, cereals, cooking vegetable oils, and sugar. The re-export share accounts for 19%. (See Annex 2)

6.1. Coffee performance 2017-2018

Rwandan coffee industry is dominated by small holder growers. Coffee is grown by 355,771 farmers and covers more than 35,000 ha. It is found in all provinces of the country. An increase in coffee quality is correlated to the number of coffee washing stations which increased from 301 (2009) to 189 (2018).

Given the need to further increase revenues from coffee within the framework of the National Export Strategy, this year's plan was the stimulation of Revenues growth (USD 70 million) and volumes increase (23,000 MT) in the Coffee sector. In order to achieve the annual target, a range of activities were undertaken in Coffee expansion, use of mineral fertilizer, marketing of product and exportation.

6.1.1. Coffee expansion and productivity

Through increased coffee production, the major interventions ranged from increasing area under production, application of fertilizer and use of agronomical practises. During 2018A&B seasons, 295,168 seedlings were planted on 117 ha in HUYE District while 295,270 were planted on 118 ha in GAKENKE district totalling 235 ha. The target was to plant 100 ha in each District.

6.1.2. Mineral fertilizer application

During 2017A season, a total of 4,812 tons of mineral fertilizers were distributed, of which 4,808 tons were applied. This represents an achievement of 96% of the annual target which is 5,000 tons. This year's fertilizers application was done using groups of farmers in collaboration with CWS operating in their respective zones and local authorities in response to the number of coffee trees in each province.

6.1.3. Coffee production FY 2017-2018

Coffee production is largely driven by smallholder farmers holding small plots that are less than a hectare. The average coffee trees per farmer ranges between 150 and 300 trees. During the FY 2017-2018, the coffee production increased from 18,439 MT to 21,959. The increase is attributed to good rainfall distributions, fertilizer application impact and the stocks of the previous year that were not exported.

6.1.4. Coffee Marketing and Promotion



Figure 7: Coffee Branding and Promotion

The National Agriculture Export Development Board (NAEB) developed a branding strategy for Rwandan coffee. The approach was to link established exporters with international buyers where possible through improved market exploration and exhibition. The local marketing of coffee is conducted in awareness program such as 'Coffee Day' to increase local consumption as well as a robust advertisement campaign in various media channels. The World of Coffee exhibition in Amsterdam in June 21-23, 2018 showcased national brand for Rwandan specialty coffee under the name, "Rwanda Coffee – A Second Sunrise". A delegation of 21 exhibitors from Rwanda attended the event.

6.1.5. Coffee export destinations

Over the reporting period, a total export volume of 20,353 MT was exported to 29 countries. The main countries destinations are reflected the figure below .Other coffee destination includes: Kenya, Japan, South Korea, South Africa, Australia, Malt, France, Germany, China and Norway among others.

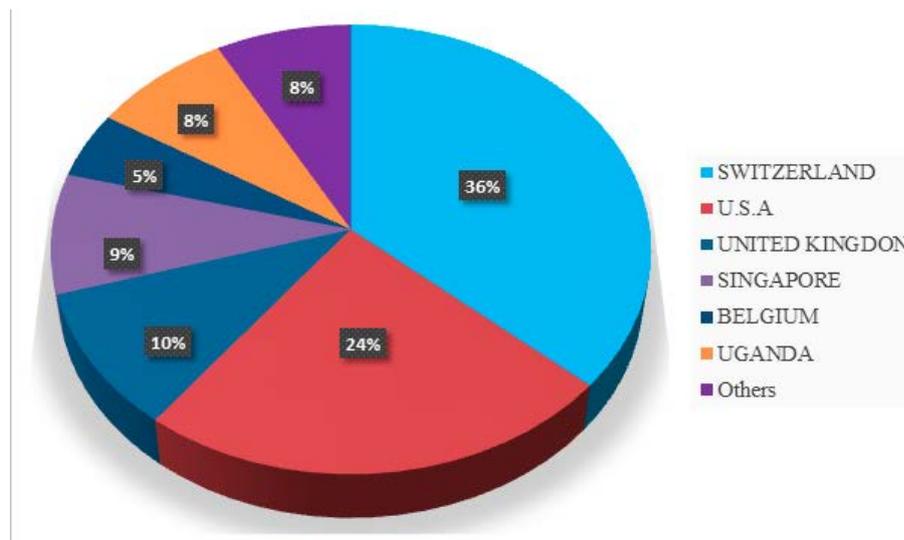


Figure 8: Coffee export destinations

6.2. Tea performance 2017-2018

The Rwandan tea sector has recently grown. It consists of 16 tea factories with two supply models from cooperatives and industrial blocks. Around 69% acreage is under growers' cooperatives that are into two categories: cooperatives with consolidated tea blocks and out-growers with scattered individual farmers.

The Rwandan tea has benefited from integrated agricultural practices such as fertilizer application, gap filling as well as tea expansion in Rugabano, Munini and Kibeho under private investment. The plan was to increase tea production from 27,500 MT to 30,000 MT and the targets was achieved with 30,560.5 MT of tea produced. Tea sales have generated USD 78 Million from the exported tea.

6.2.1. Tea production and productivity

Interventions behind increased production are categorized in two parts - those which have short impact and those with long impact. Short yield interventions include fertilizer application, good agriculture practices such as weeding, respect of cycle plucking period, skilled pluckers while interventions with long impact are expansion of area under production and gap filling.

6.2.2. Tea seedlings preparation and expansion 2017-2018

A total of 11, 414,674 seedlings were produced and 159.75 ha of plantation were planted at Munini in Nyaruguru, Rugabano in Karongi and Cyato in Nyamasheke. The total cumulative surface area planted with tea at the end of June 2018 is estimated at 27,218 ha. They were produced by small out growers and under industrial block model.

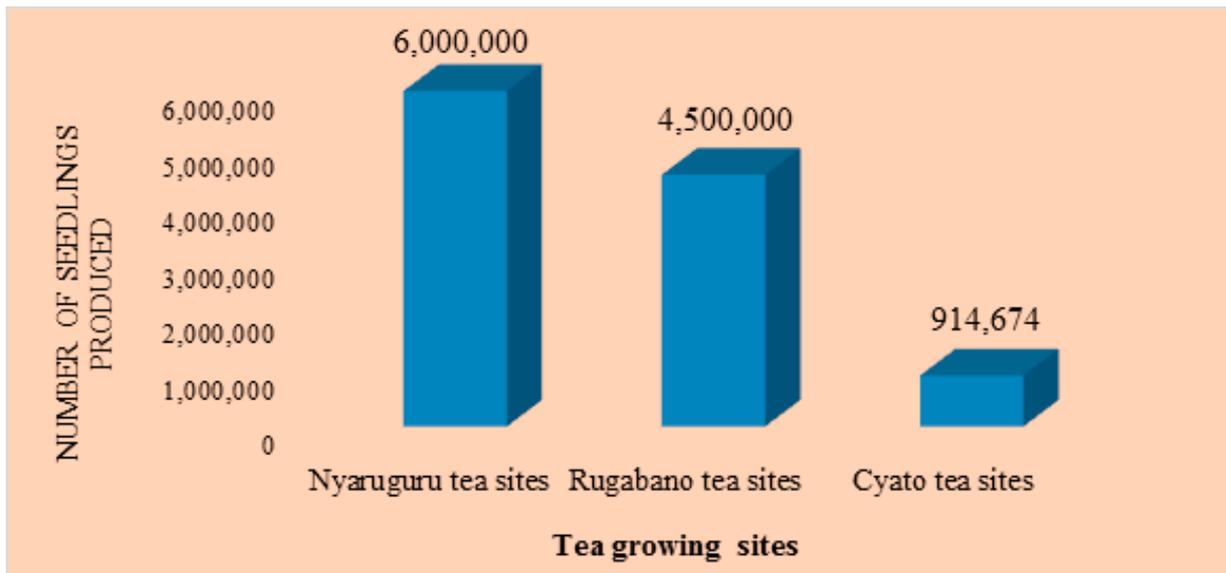


Figure 9: Tea seedling production 2017-2018

6.2.3. Fertilizer application

During the FY 2017-2018, interventions planned were application of 7,000 MT of fertilizers, training of tea pluckers and conducting farmer field schools in tea plantations by private factories. This year 2017-2018, the Tea Fertilizer Fund purchased 7,443.284 MT of mineral fertilizer, while Mulindi and Shagasha (EATI) purchased 1,354.4 MT giving a total of 8,797.661 MT of mineral fertilizer applied in the whole sector.

6.2.4 Support to tea cooperatives

Thirteen tea cooperatives were supported with planting materials (21,836 Kg of tubing and 20,154 Kg of sheeting) in order to prepare seedlings for season 2018/19.



Figure 10: seedlings preparation by cooperatives accessed planting materials



Figure 11: RUTEGROC preparing seedlings for 2018-2019 season planting

6.2.5. Made tea production

Made tea produced in the fiscal year 2017/18 was 30,561 MT from the processing of 129,265 MT of Green leaf. The 30,000 MT target was achieved at 102%. This was due to the short dry season and good rainfall that went from October 2017 to May 2018. Made Tea is processed by 16 operational factories (9 in western, 5 in Southern and 2 in Northern provinces) which process green leaf both from their own plantations and tea cooperatives ones.

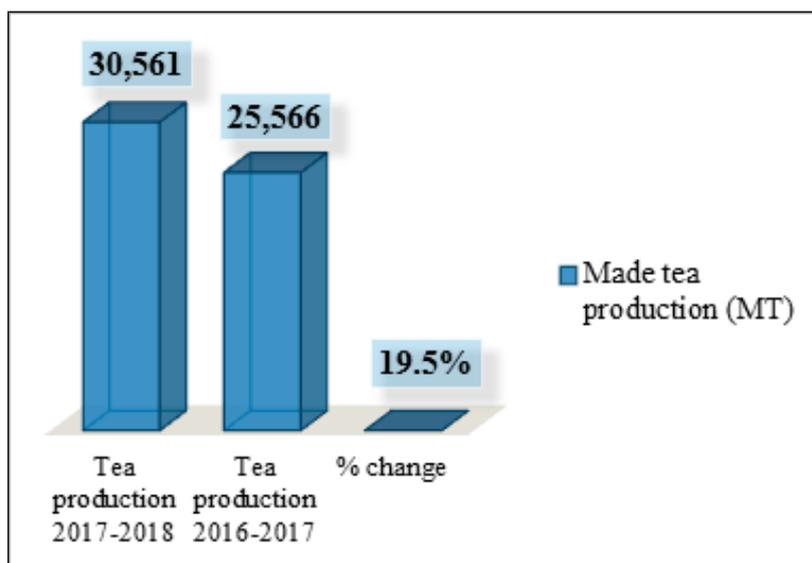


Figure 12: Made tea production

6.2.6. Improve tea plucking standard

Tea production starts with plucking. Plucking requires a defined bud leaf configuration called a plucking standard. The first step in making a quality tea requires adherence to the plucking standard. The objective is to get improved yield by plucking at shorter intervals and making sure of availability of pluckers at exact plucking time. 900 tea pluckers across different tea factories and cooperatives were trained. The implementation of this activity was coordinated under NAEB support. The trainings aimed to train pluckers on best plucking standards and practices in order to improve the quality of green leaf and Made tea as well as professionalism of tea pluckers.

6.2.7. New tea sites developments



Figure 13: Inauguration of Unilever tea Rwanda project

The agreement signed in 2016 was a green light for Unilever to invest over USD\$ 30 million in the Rwandan tea sector by developing two large scale tea sites in the sectors of Kibeho and Munini as well as a tea processing factory by December 2017. The project is expected to create 1,000 jobs in its operations. Expropriation has been completed for the industrial blocks 816.8 ha (318.8 ha for Munini and Kibeho is 498 ha and 228 families have been resettled from the expropriated land to a model village of “Four in One” and “Two in One” design complexes with water and electricity among other infrastructure facilities.

6.2.7. Tea Branding and promotion

This brand had been created as a fundamental piece of marketing strategy for Rwandan tea products worldwide. The tea value chain stakeholders brought this brand into life in order to promote the Rwanda tea industry identity, uniqueness and values. This brand will empower and inspire tea value chain stakeholders to conserve and value Rwandan natural heritage. The brand was officially launched during the Rwandan cycling competition of November 2017.

6.2.8. Rwanda Tea exports by destinations

During the FY 2017-2018, Rwandan tea was exported to 41 countries. Other countries that import our tea include: India, Switzerland, United States, Iran, Poland, Saudi Arabia and others that consume minor quantities. The total exported tea quantity amounted to 27,824 MT, an increase of 11% from the previous year. Tea exported increased by 18% generating USD\$ 88,069,061(Annex 2)

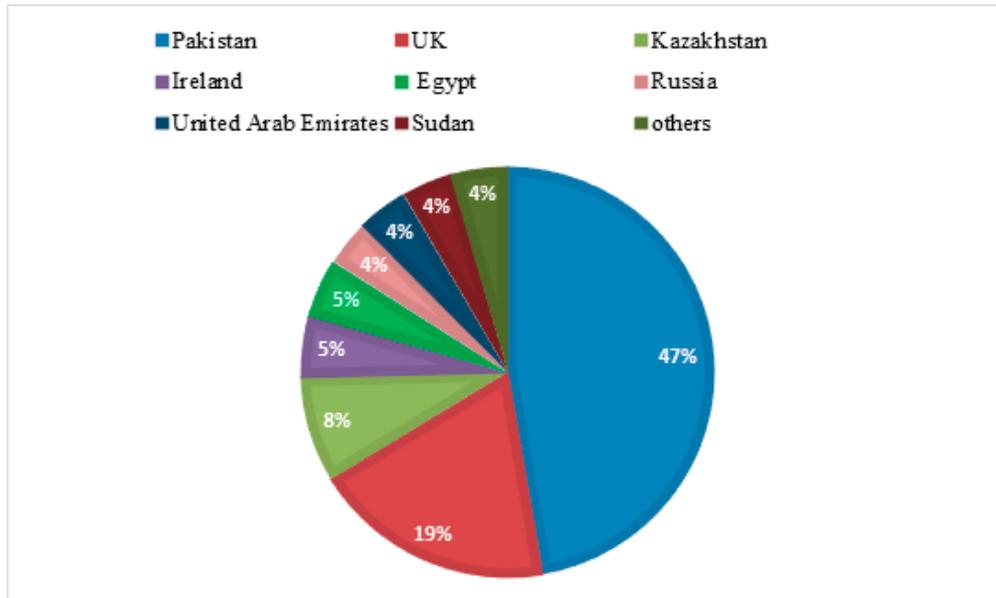


Figure 14: Tea export destinations

6.2.9. Agriculture export subsector challenges

The Agriculture export sector is an important sub sector in the agriculture value chains. Despite the progress witnessed over the previous years, the sector is still hampered by a number of challenges that interrupts the desired outcome and level of performance. Sector challenges can be traced from production to consumption stages. These challenges include but are not limited to:

1. Low production due to the low productivity levels and size of land under production.
2. Transportation of produce are costly due to inaccessible feeder roads
3. Quality standards of local produce against international market requirement standards.
4. Price volatility of our export produce.

CHAPTER 7: SANITARY AND PHYTOSANITARY MEASURES

7.1. Sanitary and phytosanitary control of imported agricultural commodities

The Sanitary and phytosanitary control of imports aims at limiting or minimizing the risk of introduction in the country of potential hazards for plant, animal or human health (new plant/animal pests, diseases or food/feed-borne hazards) as a result of international trade or movement of goods, animals and plants. The control is carried out through issuance of import permits to eligible importers and performing entry and post-entry quarantine inspection. The import permits applications are received and processed online and they are granted based on results of the disease or pest risk analysis which is also, at some extents, facilitated by the electronic system.

Agrochemicals and animal feeds (or feed ingredients) fall in this category of regulated articles and their importation is also subject to import permit and border checks. A total of 2,517 import permits were issued in the year 2017-2018 (against 3016 for last year) for plants, plants products and agrochemicals (fertilizers and pesticides); while 1033 import permits were issued (against 1490 for last year) for animal feeds and animal products including meat and derived products, fish, honey, milk and milk products.

Border quarantine checks for imported agricultural commodities were performed by Plant and Veterinary Quarantine Inspectors deployed at 4 border posts (Rusumo, Kagitumba, Gatuna and Cyanika), airport and MAGERWA inland border post. Consignments requiring further inspection or testing were checked at the off-loading sites by Post-entry Quarantine inspectors.

Through this inspection, a total of 24 MT illegally imported products were refused entry and other 8.238 MT (including 7 MT of Poultry manure containing soil) were destroyed as their return back was not possible. The figures below depict the types and quantities of inspected commodities and which were allowed entry.

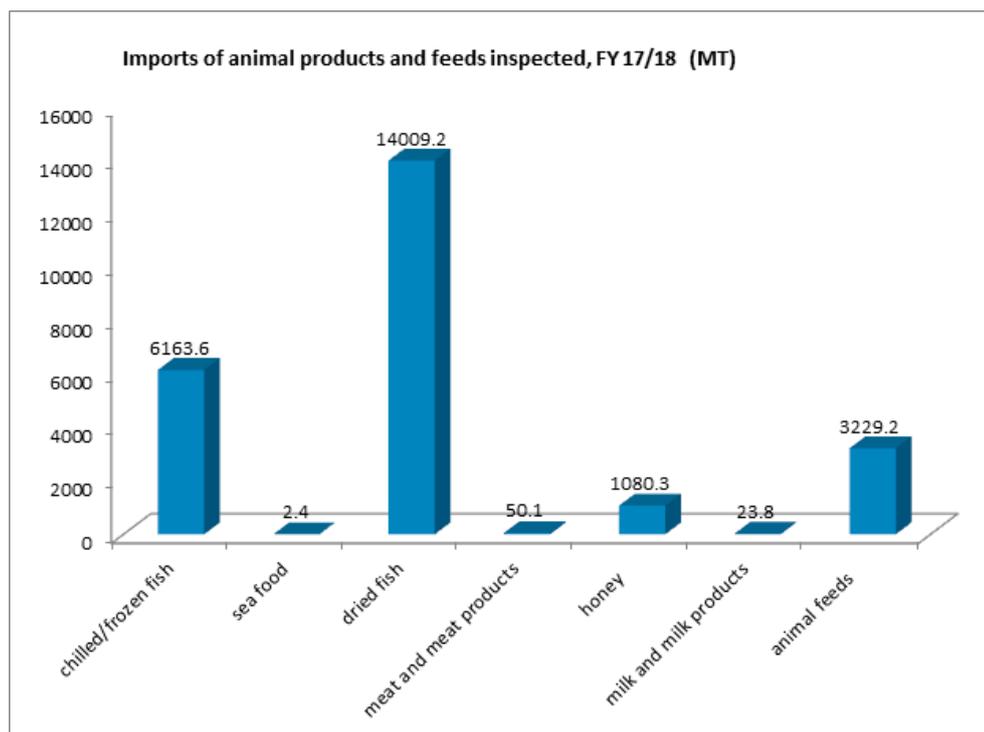


Figure 15: Types and quantities of imported agricultural commodities and inputs

7.2. Sanitary and phytosanitary certification for export of agricultural commodities

The effective SPS certification helps the country's products maintain existing export markets and penetrate to new international markets. This certification process involves continuous pest and disease surveillance in all export farms or areas as well as product inspection before export. The SPS certification (for export) is based on sanitary or phytosanitary import conditions of the importing country and the certificate is issued for a single consignment.

A total of 4238 phytosanitary and 339 veterinary/sanitary certificates were issued for export of plants and animal products and 187 sanitary certificates for re-export were also issued for animal products. Activities pertaining to pest and disease surveillance covered 52 export horticulture farms across the countries where 10 pests/diseases were reported.

7.3. Agricultural commodity and input quality control

7.3.1 Meat inspection

In the framework to improve meat hygiene and safety, abattoirs, meat transporters and butcheries were regularly inspected for compliance with requirements. In the FY 2017-2018, the 7 modern abattoirs were inspected of which a new modern pig abattoir located in Kicukiro district was registered and 12 Meat transporters were licensed. The inspection of butcheries targeted the City of Kigali and a total of 177 butcheries were inspected in the 3 districts namely Gasabo, Kicukiro and Nyarugenge. From the inspection performed, 22% of inspected butcheries

were closed for relocation as they were situated in inappropriate zones and 37.3 % were directed to collect non-compliances indicated. These activities resulted in remarkable improvement of hygienic conditions in butcheries across the City of Kigali in comparison with last year.

7.3.2 Dairy inspection

MCCs, Milk kiosks and Dairy SMEs were regularly inspected and assessed against the Ministerial order N°001/11.30 of 10/02/2016 regulating the collection, transportation and selling of milk and this aims at increasing quality, safety and competitiveness of the milk produced. The activity targeted 12 districts and a total of 68 MCCs, 102 milk kiosks and 10 SMEs were assessed and inspected leaving out actors who were not operating at that particular period. In order to help the milk chain actors improve their level of compliance, the training sessions were organized and conducted for 185 MCC lab technicians and managers on Code of milk hygiene and on the said ministerial order.

Table 19: Number of MCCs inspected and MCC staff trained per district

No	District	MCCs available	Number of MCCs inspected	Number of MCC staff trained.	
				MCC managers	MCC lab technicians
1	Gicumbi	15	14	26	14
2	Burera	4	4	6	4
3	Musanze	3	3	6	3
4	Ruhango	4	4	8	3
5	Huye	2	1	-	-
6	Nyanza	4	4	4	4
7	Nyagatare	15	15	26	12
8	Rwamagana	5	5	11	6
9	Kayonza	6	5	10	5
10	Nyabihu	5	4	8	4
11	Rubavu	7	6	10	6
12	Rutsiro	4	3	6	3
Total		74	68	121	64

7.3.3 Honey inspection

Under this activity, 37 honey collection centers and processing units were inspected across the country. The honey pesticide residue monitoring plan 2017-2018 was implemented where 12 samples from S - Mark (Standard mark) certified honey companies were collected and tested for pesticide, antibiotic and heavy metal residues. The laboratory test results showed that the Rwandan honey is safe for human consumption and were in conformity with EU honey import regulations and this allows Rwanda to be kept on the EU list of eligible countries for honey export.

7.3.4 Plant product market surveillance, sampling and testing

The market surveillance intended to check the quality status of agricultural commodity at Rwandan markets. During this activity a total of 118 samples of maize grains, ground nuts, tomatoes, apples, oranges and dried cassava were collected and tested for different quality and safety parameters including: hydrogen cyanide acid, aflatoxins (B1, B2), pesticide residues, moisture and nutrients content and *Listeria Monocytogenes*. The laboratory test results were negative indicating that the agricultural products tested were safe for human consumption. During the market surveillance activities, a total of 4262 kg of expired fertilizers and pesticides were seized and destroyed.

7.3.5 Agrochemical regulation

In accordance with the Law N° 30/2012 of 01/08/23012 governing agrochemicals in Rwanda, especially provisions related to agro-dealer and premises registration, a total of 480 agro-dealers and 505 premises were inspected of which 121 agro-dealers and 134 agrochemical premises were registered as shown in the table below. The proportions which were not registered, because of non-compliance identified, were coached to help them comply with requirements and get registered.

CHAPTER 8: INFORMATION AND COMMUNICATION MANAGEMENT

MINAGRI organized and hosted series of events that enabled Rwanda’s agriculture stakeholders to connect with their colleagues at national and international levels while increasing the country’s agriculture profile. These agriculture events offered opportunities for advanced learning from different agriculture stakeholders, experts whereas expanding mutual professional networks.

8.1. National events

8.1.1. World Food Day

On October 26, 2017, Rwanda together with FAO joined the rest of the world to celebrate the World Food Day under the theme: ***Invest in food security and rural development.***

The annual event, celebrated in Karongi District, Western Province, was an occasion to attract the private sector for further investment in food security to increase household incomes and provide opportunities to enhance Rwandans livelihood.

8.1.2. National Agriculture show

The Ministry of Agriculture and Animal Resources organized the 13th National Agricultural Show (AgriShow) from June 26 to July 03, 2018 at Mulindi Showground, Gasabo District in Kigali City. The purpose of AgriShow is to exhibit innovations and best practices in the agriculture sector. The AgriShow is an annual event to showcase innovations and best practices in the agriculture sector.

The 13th Agricultural Show had for theme, “**Invest in Innovations and Agribusiness to Transform Agriculture.**”



Minister Dr. Gerardine Mukeshimana opening the agriculture show on 26th June 2018

This event registered tremendous achievements both in terms of increased number of exhibitors and visitors:

- 314 exhibitors including local, regional and international companies as well as institutions such as Government agencies, Universities, banks, cooperatives, and universities showcased their agricultural innovations.
- 47,621 visitors came to the AgriShow (with an average of 6,803 visitors per day).

8.1.3. CAADP high level stakeholders meeting



Prime Minister Dr Edouard Ngirente and other high officials after the official opening of the meeting

On June 27-28, 2018, the Comprehensive African Agriculture Development Program III (CAADP) High-Level Stakeholders' Meeting took place in Kigali to officially launch PSTA 4.

The meeting reviewed the PSTA 4 document against its alignment to the Malabo Declaration. NEPAD spokesperson articulated the African Union continental aspiration for the agriculture sector as well its commitment to support nation-states partners willing to achieve their country's development goal which is aligned with CAADP.

During the first day of the meeting, participants were presented with PSTA 3 achievements and they entreated with a tour of the AgriShow ground by the Hon. Minister of Agriculture of Rwanda. The second day was dedicated to the official launch of PSTA 4 by the Right Hon. Prime Minister of the Republic of Rwanda, Dr Edouard NGIRENTE.

8.2. International events

8.2.1. Poultry Africa 2017

From October 4-5, 2017, Rwanda hosted the International Poultry Exhibition and Conference in Africa called, "Poultry Africa 2017" at the Kigali Convention Centre (KCC).



PS Jean Claude Kayisinga speaking during Poultry Africa conference

The high-level forum, organized by the World Poultry Science Association (WPSA) in conjunction with Trade Show for Intensive Animal Production Worldwide (VIV) in collaboration with MINAGRI, brought together over 1000 stakeholders across the poultry industry value chain from farmers, distributors, processors, food ingredient suppliers, packaging and equipment manufacturers,

scientists, to network and do business with players from around the world. The participants came from Europe, North America, Asia and Sub-Saharan Africa, to discuss the development of the poultry industry in Africa.

8.2.2. International Treaty on Plant Genetic Resources for Food and Agriculture

Rwanda hosted the Seventh Session of the Governing Body of the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) that took place from October 30 to November 03, 2017 in Kigali. The event was attended by delegates from 144 countries. ITPGRFA was mainly focused on discussing the conservation, exchange and sustainable use of crop varieties among contracting parties. This five-day meeting was organized under the theme, ***“The 2030 Agenda for Sustainable Development and the Role of Plant Genetic Resources for Food and Agriculture.”*** This meeting discussed among others the possibility of expanding and enhancing the basket of crops exchanged through the Treaty’s multilateral system. Participants also discussed the conservation and sustainable use of plant genetic resources for food and agriculture (PGRFA) and the fair and equitable sharing of benefits arising out of their use, in harmony with the Convention on Biological Diversity, for sustainable agriculture and food security

8.3. Communication

The ministry used different channels of communication to raise the agriculture sector visibility and to convey its messages to the target audience. In this regard, mass media such as broadcast, printed materials, online and social media were used to reach out to target audiences. These channels were used to inform, educate and raise awareness about different issues concerning the agricultural value chains.

8.3.1. Radio

Given the coverage penetration of radio in Rwanda and the ministry’s main target audience, radio was the most widely used channel of communication to disseminate agricultural messages. In this respect, community-based radio stations played a great role in reaching out to community farmers in different part of the country. For example,

- 312 Live radio talk shows were aired on Radio Rwanda, RC Musanze, RC Rubavu, RC Rusizi, RC Huye, RC Nyagatare and Radio Isango Star.
- 50 pre-recorded radio shows were aired on Radio Rwanda and rebroadcast on RC Musanze, RC Rubavu, RC Rusizi, RC Huye and RC Nyagatare.

8.3.2. Television

Television played a vital role to keep the general public informed of what was happening in the agriculture sector. Rwanda Television (RBA) was the main TV station with regular TV shows. In addition to RBA, other local TV stations were occasionally used to raise the profile of the agriculture sector. The broadcasting was done as follow:

- 52 TV shows and rebroadcast twice on RTV
- 21 live TV shows on RTV, Isango Star TV, CNBC and TV10

8.3.3. Social Media

Social media platforms were used to timely spread information on different activities of the ministry. The main social media used include twitter and Facebook. Flicker, YouTube and Instagram were used in a lesser extent.

8.3.4. Media Relations

Media management was on top of the daily work of the communication team. This includes proper handling of media inquiries, arranging media interviews with the ministry's officials, daily media monitoring, and strengthening relationships between the ministry and media fraternity.

Good relationship with media enabled the ministry to drive the narrative around its mission, policies, enhanced agricultural practices and Rwanda's success stories in agriculture sector in a consistent way.

Senior officials of the ministry and its agencies were also trained on how to maximize the use of communication tools to support the delivery of MINAGRI's objectives.

8.3.5. New Communication Strategy

MINAGRI has developed a new communication strategy. The overall objective of the strategy is the provision of quality information to farmers in a timely and accessible manner to aid their ability to make better decisions regarding practices designed to increase agriculture productivity and profitability. The strategy identifies areas in which the ministry's work could be strengthened to deliver better communications to more focused target in order to be more impactful in the delivery phase.

8.3.6. Extension and promotional materials

The development of agricultural extension materials was aimed at improving knowledge and skills of the frontline extension workers (Farmer Promoters, Farmer Field School Facilitators, and Social Economic Development Officers [SEDOs]). These training materials are used for communication of best farming practices such as cropping, livestock production and management, and environment, among others.

- 1,487 promotional materials were developed, printed and disseminated.
- 40 Copies of MINAGRI Report and 150 copies of Strategic Plan for Agriculture Transformation (PSTA 4th Edition) were produced and shared with MINAGRI's stakeholders.
- 2,500 copies of 2018 Agenda Agricole were produced and disseminated.
- 17,460 extension materials (printed & audio-visual) were disseminated through Twigire Muhinzi extension system.
- 109 digital green projectors were distributed in 8 districts as part of 'ICT enabled for agricultural development in rural communities' project.
- 16 video screening sessions done in 16 sectors.

CHAPTER 9: PLANNING AND BUDGET ANALYSIS

9.1. Planning process

Every Fiscal Year, the planning process starts with organizing Backward Looking Joint Sector Review (BL JSR), a forum that brings together all Agriculture Sector Working Group (ASWG) stakeholders to monitor the progress in the implementation of the planned activities vis a vis to the National Plans.

The main specific objective of BL JSR includes progress assessment in achieving sector objectives and related budget execution performance (see annex 4, 5 and 6) and highlighting key priorities for the following fiscal year (Table 20).

In relation to the implementation of policy actions, a table below presents a brief assessment of progress in achieving FY 2017/18 policy actions as approved by the Forward Looking Joint Sector Review (June 2018) and the Agricultural Sector Working Group (ASWG).

Table 20: Progress on FY 2017-18 policy actions

Policy Actions	Brief Narrative Progress against Policy Actions	Catch up Plans for areas lagging behind
Develop Agriculture Financial Services Strategy (AFSS)	Diagnostic report produce and presented to ASWG (August 31, 2017)	TECAN will finalize the strategy
Develop National Agriculture Insurance Scheme	National Agriculture Insurance Scheme developed and presented to the Economic Cluster on 10/10/2018 It will be submitted to cabinet for approval	
Update Irrigation Master plan	Inception report validated on 31/08/2018	Follow up the finalization of Rwanda Irrigation Master Plan
Validate the Updated National Agricultural Policy (2004)	NAP finalized and approved by the cabinet 11/07/2018	
Validate guidelines to mainstream nutrition in agricultural activities	Guidelines which will help the sector to have nutrition sensitive agriculture developed and validated	

Policy Actions	Brief Narrative Progress against Policy Actions	Catch up Plans for areas lagging behind
Finalize ALIS 1 and ALIS 2	ALIS 1 finalize ALIS 2 not yet finalize	We are in the process of signing a MoU with Rwanda Land Management and Use Authority (RLMUA) to get land data. The remaining activities will be finalized in collaboration with The Private Sector Driven Agricultural Growth (PS-DAG) project
Validate the Environmental and Social Implementation Manual for the Agricultural Sector	Manual developed and validated in ASWG August 2017 Training conducted and the document disseminated	

As highlighted in 2015/16 BL JSR report, the identified priorities for FY 2017/2018 which was the basis for budget allocation to the MINISTRY including agencies (RAB&NAEB) are summarized in the following table:

Table 21: Agriculture Sector Priorities

No.	2017/18 Priority Statement	Focus in FY 2017/18	Key Actions
1	<p>To increase crop and livestock productivity and post-harvest infrastructures/management for food and nutrition security</p>	<ul style="list-style-type: none"> • CIP: Increase productivity or 8 priority crops – maize, wheat, rice, beans, cassava, Irish potatoes, bananas, soybeans, Fruits & Vegetables for improved food security • LIP: Improving advisory services for livestock in line with the Twigire Muhinzi model • Small stock promotion through improved breeds • To work with communities and district-level social clusters in order to reinforce the role of agriculture for increasing the ability of vulnerable groups to cope with food security shocks and reduce unhealthy and unbalance nutrition • Increase production and available varieties of bio-fortified foods • To reduce import for key crops such as Sugar, Rice, etc in order to lessen trade deficit. 	<ul style="list-style-type: none"> • Increase availability and access to appropriate fertilizers (including lime) – engagement of private sector in fertilizer blending, development of financial products in partnership with Financial Institutions to increase input use, , support the development and control of a private sector led distribution scheme including through ICT tools. • Support to Research on fertilizer recommendations (site-specific) in Rwanda • Operationalize performance based incentives for Twigire Muhinzi extension model at a national level • Avail quality seeds by promoting a private sector led industry • Improve access and use of quality seeds and (i) Work with agro-dealers • Creating an enabling environment for the seeds market at the national and regional level through legal instruments • Facilitate access to mechanization equipment and services • Strengthen research capacity for disease management and seed development • For domestic animals, address issues related to feeds, water, health and genetics • Construction of kitchen gardens and mobilization at the sector level, including technical training, for their establishment, management and utilization • Facilitate access to mushroom tubes to improve protein consumption • Promotion of household rearing of small stock and ruminants for the homegrown production of animal proteins • Facilitate access to bio fortified variety seeds • Improve Monitoring Systems & Information Management through MIS • Conduct nutritional education programs that target small-scale farm households

No.	2017/18 Priority Statement	Focus in FY 2017/18	Key Actions
2	To build sectorial resilience to climate change and extreme weather events	<ul style="list-style-type: none"> • Increase area under irrigation through marshland and hillside irrigation (including Small Scale Irrigation technology) • Focus on improving Soil and Water Conservation • Setting up required infrastructure to cope with climate variability and climate change • Practice of climate smart agriculture • Use of appropriate ICT's with advisory services (Twigire Muhunzi) to build resilience • Increase access to finance for agriculture producers • Engagement to agricultural insurance schemes 	<ul style="list-style-type: none"> • Mobilize resources to develop irrigation in areas where studies have been completed • Fast track SSIT and effective SS rain water harvesting technologies development • Increase area protected by setting up infrastructures for soil erosion control • Establish legal instruments for utilization and maintenance of terraces • Establish policy to facilitate the development of private agricultural insurance schemes • Coordination and Support to the implementation of the ICT4Ag strategy
3	To strengthen the reliability of supply chains of raw materials from farm gates and collection centers to the agro-processing industries	<ul style="list-style-type: none"> • Support to farmers and cooperatives through advisory services (e.g. Twigire muhinzi) to provide quality raw materials for agro-processing units • Support to agro-processing companies to ensure good contract farming practices are observed (building trust in farmer-firm relations) • To support youth engagement opportunities across various stages of agricultural value chains 	<ul style="list-style-type: none"> • Support to the development of fair contract farming arrangements between farmers/cooperatives and agro-processing firms • Strengthen farmers' cooperatives through mobilization • Creation of an enabling environment for development of agro-processing industries • Enforcement (legal instruments) of contract farming arrangements • Upgrade Milk Collection Centers in the Gishwati / Mukamira and Nyanza areas by 2016 • Enforce existing access to finance for youth entrepreneurs in agriculture • Feeder road construction and maintenance

No.	2017/18 Priority Statement	Focus in FY 2017/18	Key Actions
4	To promote the commercialization of agricultural products to increase the revenues earned from domestic and international markets	<ul style="list-style-type: none"> • Linking farmer to markets through the development, rehabilitation and maintenance of rural feeder roads • Increase in revenues earned from traditional and non-traditional exports • Increase quality standards of agricultural produce to increase their competitiveness at regional and international market • More involvement of private sector 	<ul style="list-style-type: none"> • Feeder roads rehabilitation and maintenance by MINAGRI, RTDA and LODA • Increase Post Harvest infrastructures through PPP models • Improve the climate for private investments in agriculture through legal instruments and the use of land-use information systems • Facilitate access to appropriate financial products for agriculture production and marketing • Enforce compliance to Sanitary and Phytosanitary (SPS) for improved access to markets • Review market incentives and where there can be agronomic benefits to mobilize farmers to increase area under Pyrethrum and support seed multiplication. • Mobilize industrial blocks for Stevia. • Redistribution of premium in Tea and Coffee sector to farmers in order to increase incentives to grow high quality products and in a more intensive way.
5	To improve domestic self-sufficiency in seeds production for maize, rice, beans, soybeans, cassava, bananas and Irish potatoes	<ul style="list-style-type: none"> • Support the development of the seed sector (public and private) and work towards improved self-sufficiency in seeds for the following priority crops: maize, rice, Beans, soybeans, cassava bananas, and Irish potatoes • Contribute to a strong and dynamic Rwanda seed system 	<ul style="list-style-type: none"> • Establish a data base of seed users for smart subsidy management • Strengthen research on seed development • Clearly identify and define the roles of different actors in the seed sector • Review existing regional opportunities and comparative advantages for seed development and seed diversification • Establish a platform of consultation and dialogue for the seed sector public and private stakeholders • Develop short and long term programmatic regulation and control mechanisms

In the implementation of the selected priorities, a number of projects were presented to Public Investment Committee (PIC) and approved for financing.

9.2. Sector Budget Performance

The source of budget executed by MINAGRI central and its implementing agencies (RAB and NAEB) came from Government (domestic budget) and Development Partners (loan and/or grant). On the side of domestic and external budget, the revised budget allocated to MINAGRI and its affiliated agencies in 2017/18 FY was **Frw 115,809,967,014** executed at 85% compared to **Frw 115,311,580,582** allocated in 2016/17 FY executed at 83% (see table 22).

Table 22: Domestic and External Budget Execution per Agencies 2016/17 vs 2017/18 FY

AGENCIES	BUDGET TYPE	REVISED BUDGET	EXECUTED BUDGET	%	REVISED BUDGET	EXECUTED BUDGET	%
		2016/17	2016/17		2017/18	2017/18	
RAB	Recurrent	4,414,531,525	4,123,623,182	93.4	4,314,501,410	4,223,387,059	97.9
	Development	31,866,069,936	27,256,664,179	85.5	87,689,178,439	72,521,086,194	82.4
	Total	36,280,601,461	31,380,287,361	87	92,003,679,849	76,744,473,253	83.1
NAEB	Recurrent	1,187,939,902	1,187,939,902	100	1,187,939,902	1,187,939,902	100
	Development	6,521,257,385	5,871,745,369	90	13,709,373,401	12,696,085,809	92.6
	Total	7,709,197,287	7,059,685,271	92	14,897,313,303	13,884,025,711	93.2
MINAGRI Central	Recurrent	1,888,721,017	1,607,617,796	85.1	1,888,721,017	1,535,498,739	81.3
	Development	69,433,060,817	55,873,892,657	80.5	7,020,252,845	6,514,521,325	92.8
	Total	71,321,781,834	57,481,510,453	81	8,908,973,862	8,050,020,064	90.4
TOTAL		115,311,580,582	95,921,483,085	83	115,809,967,014	98,678,519,028	85

Source: MINECOFIN Revised Budget Finance Law 2016/17 vs 2017/18 & MINAGRI-SPIUs reports 2016/17 vs 2017/18

Considering domestic budget, the revised budget allocated to MINAGRI and its affiliated agencies in 2017/2018 was 55,847,738,279 Rwf executed at 98.9% compare to 53,135,129,630 Rwf allocated in 2016/2017 executed at 91.5% (see table 23).

Table 23: Domestic Budget Execution per Agencies 2016/17 vs 2017/18 FY

Agencies	Budget types	Revised budget 2016/17	Executed budget 2016/17	%	Revised budget 2017/18	Executed budget 2017/18	%
RAB	Recurrent	4,414,531,525	4,123,623,182	93.4	4,314,501,410	4,223,387,059	97.9
	Development	28,713,099,471	26,682,126,412	92.9	33,784,069,201	33,567,291,627	99.4
	S/Total	33,127,630,996	30,805,749,594	93.0	38,098,570,611	37,790,678,686	99.2
NAEB	Recurrent	1,187,939,902	1,187,939,902	100.0	1,187,939,902	1,187,939,902	100.0
	Development	6,521,257,385	5,871,745,369	90.0	8,889,988,419	8,819,842,094	99.2
	S/Total	7,709,197,287	7,059,685,271	91.6	10,077,928,321	10,007,781,996	99.3
MINAGRI CENTRAL	Recurrent	1,888,721,017	1,607,617,796	85.1	1,888,721,017	1,535,498,739	81.3
	Development	10,409,580,330	9,163,705,951	88.0	5,782,518,330	5,887,983,777	101.8
	S/Total	12,298,301,347	10,771,323,747	87.6	7,671,239,347	7,423,482,516	96.8
TOTAL		53,135,129,630	48,636,758,612	91.5	55,847,738,279	55,221,943,198	98.9

Source: MINECOFIN (Revised Budget Finance Law 2016/17 vs 2017/18) & MINAGRI-SPIUs reports 2016/17 vs 2017/18

Concerning the execution per type of budgets, the recurrent budget was executed at 94% in 2017/18 vs 92% in 2016/17. The internally development budget was executed at 99% in 2017/18 against 91% in 2016/17. The development budget from the donors (external funds) was executed at 72.5% in 2017/18 vs 76% in 2016/17. The earmarked transfers (budget decentralized at the districts) were executed at 86.5% in 2017/18 against 95% in 2016/17 (see table 24)

Table 24. Budget Execution per types of budget (both domestic and external)

MINAGRI BUDGET TYPES	REVISED BUDGET (2016/17)	EXECUTED BUDGET (2016/17)	%	REVISED BUDGET (2017/18)	EXECUTED BUDGET (2017/18)	%
Recurrent	7,491,192,444	6,919,180,880	92	7,391,162,329	6,946,825,700	94.0
Development (Internal)	45,643,937,186	41,717,577,732	91	48,456,575,950	48,275,117,498	99.0
Development (External)	62,176,450,952	47,284,724,473	76	59,962,228,735	43,456,575,830	72.5
Earmarked Transfers	28,753,496,718	27,379,135,177	95	23,059,903,082	19,942,963,664	86.5
Total	144,065,077,300	123,300,618,262	86	138,869,870,096	118,621,482,692	85.4

Source: MINECOFIN (Revised Budget Finance Law 2016/17 vs 2017/18) & MINAGRI-SPIUs reports 2016/17 vs 2017/18

According to the table 23, we find that the revised budget allocated to MINAGRI and its affiliated agencies in 2017/18 (Frw 138,869,870,096) is less than the revised budget in 2016/2017 (Frw 144,065,077,300). This is due to the fact that the budget which was allocated to Feeder Roads Development Project (Frw 10,707,810,507) was transferred to MININFRA/RTDA.

The development budget from the donors (external funded projects) was executed at the lower rate (72.5%) in 2017/2018 compared to 76% in 2016/2017. This may be due to different reasons registered in the budget execution of externally funded projects. They include among others:

- Rwanda Dairy Development Project (RDDP) (52.5%): The low execution was caused by the process of procuring pregnant cows that has not well achieved and out of 3,000 planned; only 1,051 cows were procured and already distributed to farmers. The activities related to capacity building and Girinka Program package were also consequently not well implemented by Heifer international Rwanda. In addition, different activities with high amount were also not achieved due to delayed registered to receive the “no objection” from the donor (IFAD).
- Climate Resilient Post-Harvest and Agribusiness Support Project (PASP) (92.6%): Budget execution was not 100% due to the fact that the contract of Technical service providers in charge of maize & beans, Irish Potatoes have been terminated due to none performance, consequently the budget allocated to capacity building of cooperatives on post-harvest operations was not disbursed.
- Project for Rural Income through Exports (PRICE) (80.8): The low execution was caused by the establishment of a Fertilizer Revolving Fund which was delayed by legal procedures and this caused the non-utilization of funds planned for purchasing fertilizer worth 287m. Again, the construction of 5 hangars for tea green leaf collection in Nshili delayed due to the contractor who met financial difficulties and could not finish the works before the year ended. In addition, the construction of Silk reeling Factory was delayed due to technical issues and lack of building materials and could not be completed on time. Thus, the contracts with service providers on production of fruit seedlings and geranium were not executed as planned due to heavy rains last season.

Third Rural Sector Support Project (RSSP3) (69.9%): The low rate of budget execution was caused by heavy rain falls during the months of March to May 2018 which affected the rehabilitation works of rice schemes marshlands for Kabuye (304 ha) and Rwamagana (585ha) which negatively affected the budget execution.

Rural Community Support Project (RCSP) (56.7%): The low rate of execution was due to the heavy rain experienced during the period of March to May 2018 delayed the works for marshland of Rwinkwavu (462ha) and Kanyonyomba marshland (110ha) development and consequently no payment done. Bwanya marshland (200ha) was planned to be developed but the final report for feasibility study showed that it was not economically feasible. In addition, the implementation of land husbandry and post-harvest infrastructure works in different RCSP sites delayed because the Donor (KOICA) delayed to provide the clearance as the project was being restructured for one year of extension

For RAB Competitive Research Project registered low rate of budget execution (60.6%). This is due to the fact that the expected planned budget (Frw 1,170,826,790) to be received in 2017/18 was not disbursed by the donors (See annex 6).

NB: On the budget side, we noticed discrepancies between what is presented by MINAGRI and what we can find in the Revised Budget Finance Law. The revised total budget in Finance Law is Frw 109,041,344,142 while the Revised Budget presented by MINAGRI, where Domestic Budget was provided by MINECOFIN while External Funds was captured from SPIUs Project Documents is Frw 115,809,967,014; making a difference of Frw **6,768,622,872**. This latter is the amount not accounted in the Revised Budget Finance Law. It may be accounted as the off-budgetary projects externally financed (**see annex 6**).

9.3 The Management Information System (MIS) and Reporting

9.3.1 Background



Figure 16: MIS login screen

The MIS has been established to support the provision of accurate and timely information on the performance of the agricultural sector with regards to the implementation of the Strategic Plan for the Transformation of the Agriculture in Rwanda (PSTA 3). The system, hosted at the National Data Centre, is web-based but allows off-line use. The figure below shows the log-in screen of the MIS.

9.3.2 Functionality of the MIS

Users from relevant organizations have been trained in the use of the MIS (MINAGRI, RAB, NAEB, District-agricultural staff). Most field data are regularly collected by Sector Agronomists and Veterinarians and recorded in the system on a monthly basis. The figure below shows the data entry screen.

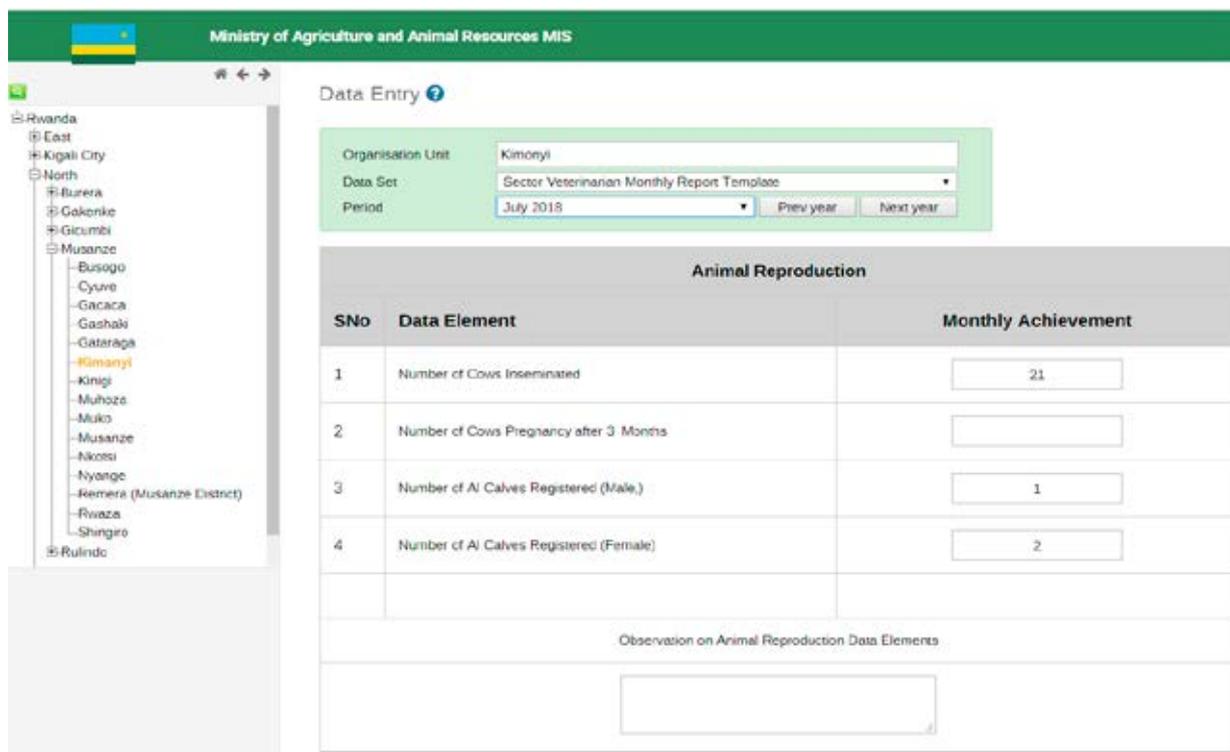


Figure 18: Example of data entry screen for sector veterinarian

After data are entered, they appear on the dashboards developed for the different users. Various types of reports and charts can be generated and viewed. The figure below shows the report on animal improvement for all districts.

Period	Jul 2017 to Jun 2018				
Organization unit / Data	Number of Cows Inseminated Progress	Number of AI Registered Progress	Number of Cattle vaccinated against Black Quarter Anthrax (BQ) Progress	Number of Cattle vaccinated against Brucellosis Progress	Number of Cattle vaccinated against LSD Progress
Ngoma	2 190	472	24 497		6 513
Ikeshi	2 095	322	9 267		16 325
Gakenke	6 206	1 674			88 205
Muhanga	2 459	726	11 278		16 608
Ruhango	5 436	621	1 062		31 300
Huye	4 026	1 260	59 327	7 642	23 674
Gashyamba	2 956	690	3 400		6 740
Musanze	2 532	293	16 341	871	4 349
Gashyamba	3 097	1 019	7 512	200	7 916
Gisagara	3 565	1 729	40 399		40 399
Rwamagana	7 089	1 024	9 153	645	25 612
Kayanza	2 346	582	33 616		33 616
Kicukiro	1 210	590	3 116	155	2 040
Bugesera	4 174	550	20 240	2 954	17 355
Nyanzagabo	4 325	1 434	79 324		25 960
Nyagatare	2 677	659	36 947	50	38 365
Gicumbi	9 409	2 459	29 077	7 653	70 453
Burera	6 740	1 299	27 557	4 187	60 798
Nyanungwe	646	231	3 563		3 927
Kimonyi	3 721	1 074	43 811	4 982	78 025
Total	76 803	18 920	453 506	29 459	601 911

Figure 19: Example of a report on animal improvement

The MIS has been the main tool for generating information for the reporting on agricultural performance, including the Imihigo reports and implementation of 7YGP, National Leadership Retreat Resolution, P4R, amongst others.

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ANNEXES

Annex 1: Inventory of Post-Harvest Infrastructures constructed and their storage capacity

No	Province	District	Facility Nature	Name	Capacity in MT	Ownership
I	Kigali City					
1		Kicukiro	Warehouse	SOSOMA Industries	1,300	Private
2		Kicukiro	Warehouse	SOPAB	3,500	Private
3		Kicukiro	Warehouse	SOPAV Sarl	600	Private
4		Kigali City	Depot	IHOGOZA	580	Private
5		Kicukiro	Warehouse	World Food Programme	10,000	Private
6		Kicukiro	Warehouse	MINAGRI/NSGR	3,000	Government
7		Kicukiro	Warehouse	ENAS	16,000	Private
8		Kicukiro	Warehouse	MINIMEX	5,000	Private
9		Gasabo	Silo	AIF Rwanda	20,000	Private
10		Gasabo	Warehouse	AIF Rwanda	10,000	Private
11		Gasabo	Silo	AZAM	9,000	Private
12		Gasabo	Silo	AZANIA	6,000	Private
13		Gasabo		ISCO	6300	Private
14		Gasabo		KAMARI	7,000	Private
15		Gasabo		ZARA	3,000	Private
	Total				101,280	
II	Eastern					
1		Kirehe	Warehouse	ENAS	5,000	Private
2		Kirehe	Warehouse	COACMU Cooperative	500	Private
3		Kirehe	Warehouse	IBYZABIRIMBERE Cooperative	500	Private
4		Kirehe	Warehouse	COAIGA	1,500	Private
5		Kirehe	Warehouse	MAGERWA	200	Government
6		Kirehe	Warehouse	PASP	400	Private
7		Kayonza	Warehouse	INDATWA	2,000	Government
8		Kayonza	Warehouse	RSSP	5,600	Government

No	Province	District	Facility Nature	Name	Capacity in MT	Ownership
9		Kayonza	Warehouse	IMBEREHEZA	2,520	Government
10		Kayonza	Warehouse	PASP	8,200	Private
11		Kayonza	Warehouse	TUBURA	4000	Private
12		Nyagatare	Warehouse	RDO/RDI	3,000	Private
12		Nyagatare	Warehouse	MAPROCUGA	1,600	Private
13		Nyagatare	Warehouse	COOPAMA	120	Private
14		Nyagatare	Warehouse	COOPAMA	1,500	Private
15		Nyagatare	Warehouse	APTC	2,000	Private
16		Nyagatare	Warehouse	KABOKU	1,500	Private
17		Nyagatare	Warehouse	MINAGRI	700	Government
18		Nyagatare	Silo	MINAGRI/NSGR	10,000	Government
19		Nyagatare	Warehouse	PASP	800	Private
20		Gatsibo	Warehouse	KOAMA	1,500	Private
21		Gatsibo	Warehouse	MINAGRI/RSSP	5,600	Government
22		Gatsibo	Warehouse	District	5,000	Government
23		Rwamagana	Silo/Warehouse	PRODEV	5,000	Private
24		Rwamagana	Warehouse	RWAMAGANA RICE	4,500	Private
25		Rwamagana	Warehouse	RSSP	5,400	Government
26		Rwamagana	Silo	PACI	2,250	Private
26		Bugesera	Silo	MINAGRI	6,000	Private
27		Bugesera	Warehouse	Bugesera Agribusiness Co LTD	1,000	Private
28		Ngoma	Warehouse	COPAMUJA	1,500	Private
29		Ngoma	Warehouse	KOREMU	1,500	Private
30		Ngoma	Warehouse	PASP	500	Private
	Total				91,390	
III	Northern					
1		Musanze	Warehouse	TOP SERVICE, Ladislas Mwitende	8,000	Private

No	Province	District	Facility Nature	Name	Capacity in MT	Ownership
2		Musanze	Warehouse	COAMV	700	Private
3		Musanze	Silo	CARITAS Ruhengeri	5,600	Private
4		Musanze	Warehouse	ZAMURA Company	15,000	Private
5		Musanze	Silo/Warehouse	SOTIRU Ltd	6,200	Private
6		Musanze	Silo/Warehouse	SOTIRU Ltd	6,200	Private
7		Musanze	Warehouse	PASP	600	Private
8		Burera	Warehouse	RSSP	1,200	Government
9		Gicumbi	Silo/Warehouse	PEMBE Rwanda S.A.R.L	11,000	Private
10		Gicumbi	Warehouse	RSSP	2,000	Government
11		Rulindo	Warehouse	RSSP	2,500	Government
	Total				59,000	
IV	Southern					
1		Huye	Warehouse	COAGIMPA	150	Private
2		Huye	Warehouse	KOAMU	200	Private
3		Huye	Warehouse	Ntyazo sector	500	Government
4		Huye	Warehouse	Gikonko Rice	900	Private
5		Huye	Warehouse	RSSP	1,000	Government
6		Ruhango	Warehouse	PASP	40	Private
7		Gisagara	Warehouse	DUHOZANYE	100	Private
8		Gisagara	Warehouse	COJYAMUGI	150	Private
9		Nyamagabe	Warehouse	MINAGRI/RSSP	2,000	Government
10		Nyamagabe	Warehouse	MINAGRI/NSGR	400	Government
11		Kamonyi	Warehouse	IMPABARUTA	110	Private
12		Kamonyi	Warehouse	PASP	1,200	Private
13		Muhanga	Warehouse	Private Sector	5,000	Private
14		Nyanza	Warehouse	RSSP	5,000	Government

No	Province	District	Facility Nature	Name	Capacity in MT	Ownership
15		Nyanza	Warehouse	PASP	25	Private
16		Nyanza	Warehouse	COAMANYA	900	Private
17		Nyanza	Warehouse	MINAGRI/NSGR	3,000	Government
18		Nyanza	Warehouse	KOAINYA INDATWA	4,300	Government
	Total				24,975	
V	Western					
1		Rubavu	Warehouse	NYUNDO MAIZE CAMPANY	1,700	Private
2		Rubavu	Warehouse	Kivu Maize Factory	720	Private
3		Rubavu	Warehouse	PASP	20	Private
4		Rutsiro	Warehouse	MINAGRI/RSSP	5,000	Government
5		Nyabihu	Warehouse	Maiserie de Mukamira S.A.R.L	5,000	Private
6		Nyabihu	Warehouse	JENDA Store	7,300	Private
7		Nyabihu	Warehouse	MINAGRI/NSGR	700	Government
8		Nyabihu	Warehouse	MINAGRI/RSSP	2,000	Government
9		Nyabihu	Warehouse	PASP	560	Private
10		Ngororero	Warehouse	MINAGRI/RSSP	2,000	Government
11		Karongi	Warehouse	MINAGRI/RSSP	6,000	Government
12		Karongi	Warehouse	MINAGRI/RSSP	250	Government
13		Rusizi	Warehouse	MINAGRI/NSGR	400	Government
14		Rusizi	Warehouse	Bugarama Rice	1,000	Private
15		Rusizi	Warehouse	SODAR	2,000	Private
16		Rusizi	Warehouse	COTCORI Cooperative	500	Private
	Total				35,150	
	GRAND TOTAL				311,795	

Annex 2: Export performance 2017/2018

Commodities	July 2017-June 2018	July 2016-June 2017	% change
TEA			
Production	30,560,564	25,565,512	20
Exports(Kg)	27,824,246	25,128,967	11
Value of Exports(USD) Tea	88,069,061	74,548,304	18
Coffee			
Production	21,959,880	18,439,111	19
Exports(Kg)	20,353,423	18,502,442	10
Value of Exports(USD) Coffee	69,359,159	58,526,023	19
Pyrethrum			
Exports(Kg)	23,262	9329	149
Value of Exports(USD)	3,774,824	1,655,350	128
Average export price/Kg USD			
Total traditional export	161,203,045	134,729,678	20
II. Nontraditional exports			
Vegetables			
Exports(Kg)	20,635,174	19,227,264	7.32
Value of Exports(USD)	12,389,352	11,001,766	12.61
Fruits			
Exports(Kg)	8,757,395	5,918,322	47.97
Value of Exports(USD)	6,890,737	4,584,972	50.29
Flowers			
Exports(Kg)	704,736	177660.6	
Value of Exports(USD)	4,159,785	1,243,427	
Diversification sector			
Hides and Skins			
Exports(Kg)	3,400,949	6,345,145	(46.40)
Value of Exports(USD)	5,853,755	7,957,948	(26.44)
Meat			
Exports(Kg)	7,021,167	6,237,017	12.57
Value of Exports(USD)	24,784,245	22,906,406	8.20
Dairy			
Exports(Lts)	17,514,192	12,081,956	44.96
Value of Exports(USD)	20,644,940	13,061,738	58.06

Commodities	July 2017-June 2018	July 2016-June 2017	% change
Live Animals			
Number	941,046	1,139,227	(17.40)
Value of Exports(USD)	28,528,975	27,001,980	5.66
Cereals(Grains & Flours)			
Exports(Kg)	237,686,941	141,959,696	67.43
Value of Exports(USD)	104,258,040	68,040,167	53.23
Pulses			
Exports(Kg)	28,563,820	16,995,500	68.07
Value of Exports(USD)	15,022,428	10,095,956	48.80
Roots and Tubers and Flours			
Exports(Kg)	32,829,990	16,131,105	
Value of Exports(USD)	13,515,359	4,758,216	
Vegetables oil			
Exports(Kg)	38,718,629	16,879,563	
Value of Exports(USD)	38,313,554	18,426,324	
Fish			
Exports(Kg)	13,164,886	8,620,794	52.71
Value of Exports(USD)	25,652,861	16,161,431	58.73
Oleaginous (Soja, groundnuts, sunflowers)			
Exports(Kg)	31,791,744	10,096,586	
Value of Exports(USD)	31,249,878	9,463,630	
Eggs			
Exports(Kg)	14,883,770	11,538,178	
Value of Exports(USD)	12,608,462	2,472,786	
Sugar			
Exports(Kg)	7,139,431	2,560,054	
Value of Exports(USD)	5,337,948	2,416,008	
Other Agricultural exports			
Exports(Kg)	3,055,541	1,961,079	
Value of Exports(USD)	5,493,479	2,188,228	
Total non-traditional exports	354,703,800	221,780,982	59.93
Grand total	515,906,845	356,510,660	44.71

Annex 3: Number of agro-dealers and premises inspected and registered per district

District	Inspected agro-dealers	Inspected premises	Licensed agro-dealers	Licensed agrochemical premises
Rutsiro	12	12	5	5
Rubavu	25	26	6	7
Nyabihu	40	41	22	23
Karongi	8	9	5	6
Ngororero	11	19	8	12
Nyamasheke	14	15	4	5
Rusizi	18	20	6	8
Nyarugenge	34	36	8	8
Kicukiro	15	15	4	4
Gasabo	7	7	1	1
Gakenke	8	8	1	1
Rulindo	18	18	4	4
Musanze	45	48	1	2
Burera	15	15	3	3
Gicumbi	15	15	8	8
Muhanga	24	26	3	3
Kamonyi	10	11	2	2
Nyanza	24	24	0	0
Huye	31	32	4	4
Gisagara	6	7	0	1
Nyamagabe	11	11	2	2
Nyaruguru	1	1	0	0
Kirehe	10	10	2	2
Ngoma	3	3	1	1
Nyagatare	12	12	4	4
Gatsibo	10	10	1	1
Bugesera	32	32	13	13
Kayonza	21	22	3	4
Total	480	505	121	134

Annex 4: MINAGRI Central Projects Budget Execution 2017/18 FY

Projects	Revised domestic budget (according to project document)	Revised External Loan (according to project document)	Revised External Grant (according to project document)	Total (according to project document)	Executed Budget	%	Revised domestic budget (according to Budget Law)	Revised External Loan (according to Budget Law)	Revised External Grant (according to Budget Law)	Total (according to Budget Law)	Difference between budget in project documents and budget law)
Buffet Project	1,810,903,656	-	570,000,000	2,380,903,656	2,029,625,063	85.2	1,842,903,656	-	570,000,000	2,412,903,656	(32,000,000)
Pairb: Projet D'Appui Aux Infrastructures Rurales De La Region Naturelle De Bugesera	211,000,000	-		211,000,000	145,237,820	68.8	211,000,000	-	-	211,000,000	-
National Strategic Grain Reserve Project (NSGR)	3,393,037,982	-		3,393,037,982	3,368,818,006	99.3	3,173,037,982	-	-	3,173,037,982	220,000,000
Sector Policy Support Program (SPSP) for Rural Feeder Roads	-	-	667,734,515	667,734,515	626,537,548	93.8	-	-	667,734,515	667,734,515	-
Smart Agriculture Information System (SAIS)	362,576,692			362,576,692	339,302,888	93.6	330,576,692	-	-	330,576,692	32,000,000
Agricultural Insurance Project	-			-	-	-	220,000,000			220,000,000	(220,000,000)
Climate mainstreaming pilot for the coffee and tea sectors	5,000,000			5,000,000	5,000,000	100.0	5,000,000	-	-	5,000,000	-
TOTAL	5,782,518,330	-	1,237,734,515	7,020,252,845	6,514,521,325	92.8		-	1,237,734,515	7,020,252,845	-

Annex 5: NAEB Projects Budget Execution 2017/18 FY

Projects	Revised domestic budget (according to project document)	Revised External Loan (according to project document)	Revised External Grant (according to project document)	Total (according to project document)	Executed Budget	%	Revised domestic budget (according to Budget Law)	Revised External Loan (according to Budget Law)	Revised External Grant (according to Budget Law)	Total (according to Budget Law)	Difference between budget in project documents and budget law)
Improving Coffee Production, Productivity And Quality	938,691,851	-	-	938,691,851	908,911,205	96.8	978,845,473	-	-	978,845,473	(40,153,622)
Export Commodities Profiling	20,895,649	-	-	20,895,649	6,594,173	1.6	32,334,289	-	-	32,334,289	(11,438,640)
Tea Expansion Project	4,092,138,088	-	-	4,092,138,088	4,070,971,459	99.5	3,887,678,917	-	-	3,887,678,917	204,459,171
Export logistics development	-	-	-	-	-	-	200,000,000	-	-	200,000,000	(200,000,000)
Project: Commodity Chain Programme (Horticulture Intensification And Quality Management)	453,703,939	-	-	453,703,939	451,850,642	99.6	429,494,363	-	-	429,494,363	24,209,576
Development Of New Agriculture Export Chain	151,045,871	-	-	151,045,871	149,519,671	99.0	80,422,055	-	-	80,422,055	70,623,816
Kigali Wholesales Market	301,260,000	-	-	301,260,000	301,260,000	100.0	301,260,000	-	-	301,260,000	-
Flower Park Construction	2,617,077,919	-	-	2,617,077,919	2,615,941,868	100.0	2,664,778,220	-	-	2,664,778,220	(47,700,301)
SERICULTURE PROJECT	215,175,102	-	-	215,175,102	214,793,076	99.8	215,175,102	-	-	215,175,102	-

Project for Rural Income through Exports (PRICE)	100,000,000	3,766,602,000	1,052,782,982	4,919,384,982	3,976,243,715	80.8	100,000,000	3,766,602,000	1,052,782,982	4,919,384,982	-
TOTAL	8,889,988,419	3,766,602,000	1,052,782,982	13,709,373,401	12,696,085,809	92.6	8,889,988,419	3,766,602,000	1,052,782,982	13,709,373,401	-

Annex 6. RAB Projects Budget Execution 2017/18 FY

Projects	Revised domestic budget (according to project document)	Revised External Loan (according to project document)	Revised External Grant (according to project document)	Total (according to project document)	Executed Budget	%	Revised domestic budget (according to Budget Law)	Revised External Loan (according to Budget Law)	Revised External Grant (according to Budget Law)	Total (according to Budget Law)	Difference between budget in project documents and budget law)
Gako Intergrated Beef Project	4,616,737,623	-	-	4,616,737,623	4,231,958,075	91.7	4,616,737,623	-	-	4,616,737,623	-
Land Husbandry Hillside Irrigation And Water Harvesting (LWH)	2,292,454,377	13,337,743,100	-	15,630,197,477	13,048,363,750	83.5	2,292,454,377	7,728,300,557	-	10,020,754,934	5,609,442,543
Livestock Intensification Project	932,050,000	-	-	932,050,000	1,524,553,284	163.6	932,050,000	-	-	932,050,000	-
Project: One Cow Per Family	316,637,529	-	-	316,637,529	316,225,417	99.9	316,637,529	-	-	316,637,529	-
Safeguarding National Genetic Resources For Food Security And Sustainable Development	149,000,000	-	-	149,000,000	127,726,746	85.7	149,000,000	-	-	149,000,000	-
The Project For Valorization Of Rurambi Irrigation Scheme In Bugesera District.	423,423,531	-	-	423,423,531	383,423,531	90.6	423,423,531	-	-	423,423,531	-
Aquaculture And Fisheries Development Project	959,304,023	-	-	959,304,023	877,085,524	91.4	959,304,023	-	-	959,304,023	-
Project on Research infrastructure enhancement for improved service delivery	1,314,954,012	-	-	1,314,954,012	834,126,989	63.4	1,314,954,012	-	-	1,314,954,012	-
RAB Competitive Research Project	-	-	1,170,826,790	1,170,826,790	709,870,372	60.6	-	-	1,170,826,790	1,170,826,790	-
Third Rural Sector Support Project (RSSP3)	117,000,000	9,345,436,065	-	9,462,436,065	6,737,709,141	71.2	300,000,000	6,003,091,497	-	6,303,091,497	3,159,344,568
Development of Market Responsive Plant Varieties and Seed Systems to Reduce Rwanda's Dependency on Seed Importation Project	1,126,270,203	-	-	1,126,270,203	864,382,878	76.7	1,126,270,203	-	-	1,126,270,203	-
Crop Intensification Programme	11,951,366,333	-	-	11,951,366,333	12,970,239,067	108.5	11,951,366,333	-	-	11,951,366,333	-
Livestock Intensification Program	39,365,000	-	-	39,365,000	21,365,000	54.3	39,365,000	-	-	39,365,000	-

Projects	Revised domestic budget (according to project document)	Revised External Loan (according to project document)	Revised External Grant (according to project document)	Total (according to project document)	Executed Budget	%	Revised domestic budget (according to Budget Law)	Revised External Loan (according to Budget Law)	Revised External Grant (according to Budget Law)	Total (according to Budget Law)	Difference between budget in project documents and Budget Law)
One Cup of Milk per Child Program	46,000,000	-	-	46,000,000	46,000,000	100.0	46,000,000	-	-	46,000,000	-
Government Fund Irrigation Project	5,494,180,440	-	-	5,494,180,440	5,336,781,790	97.1	5,494,180,440	-	-	5,494,180,440	-
Agriculture Mechanization	500,000,000	-	-	500,000,000	469,025,894	93.8	500,000,000	-	-	500,000,000	-
LIME Project	100,000,000	-	-	100,000,000	99,558,684	99.6	100,000,000	-	-	100,000,000	-
Export Targeted Irrigation (ETI)	700,000,000	5,917,450,000	-	6,617,450,000	5,598,399,475	84.6	700,000,000	5,917,450,000	-	6,617,450,000	-
Small Scale Irrigation Technology (SSIT)	871,000,000	-	-	871,000,000	844,732,718	97.0	871,000,000	-	-	871,000,000	-
Feeder Roads Development Projects (FRDP)	-	-	-	-	-	-	200,000,000	10,507,810,507	-	10,707,810,507	(10,707,810,507)
Climate Resilient Post-Harvest and Agribusiness Support Project (PASP)	100,000,000	5,286,568,000	2,535,640,000	7,922,208,000	7,339,001,342	92.6	100,000,000	1,222,398,000	-	1,322,398,000	6,599,810,000
Rural Community Support Project (RCSP)	85,750,000	-	3,194,533,834	3,280,283,834	1,925,513,268	58.7	200,000,000	-	972,447,566	1,172,447,566	2,107,836,268
Livestock Infrastructure Support Project (LISP)	558,466,000	-	-	558,466,000	406,630,773	72.8	558,466,000	-	-	558,466,000	-
Rwanda Dairy Development Project (RDDP)	100,000,000	8,807,908,503	4,284,302,946	13,192,211,449	6,930,931,713	52.5	100,000,000	8,807,908,503	4,284,302,946	13,192,211,449	-
The Horticulture Centre of Excellence	715,110,130	-	-	715,110,130	649,480,763	90.8	715,110,130	-	-	715,110,130	-
Increase resilience to climate change through integrated soil, water and agroforestry technologies for increased crop productivity.	50,000,000	-	-	50,000,000	3,000,000	6.0	50,000,000	-	-	-	-
The Project for Rehabilitation of Irrigation Facilities in Rwamagana District	-	-	24,700,000	24,700,000	-	-	-	-	24,700,000	24,700,000	-
Karambi Irrigation scheme	225,000,000	-	-	225,000,000	225,000,000	100.0	225,000,000	-	-	225,000,000	-
TOTAL	33,784,069,201	42,695,105,668	11,210,003,570	87,689,178,439	72,521,086,194	82.7	34,281,319,201	40,186,959,064	6,452,277,302	80,920,555,567	6,768,622,872

Annex 7: Livestock statistics

Livestock population by type / head														
Category	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Cattle	1 006 572	1 122	1 147 152	1 194 895	1 218 518	1 334 820	1 143 231	1 135 141	1 138 799	1 165 835	1 349 792	1 214 244	1 166 187	1 293 768
Goats	1 263 962	1 688 279	2 137 731	2 519 803	2 620 595	2 688 273	297 078	2 672 751	2 570 275	2 532 277	2 706 382	2 605 780	2 923 706	2 731 795
Sheep	686 837	695	703 989	718 178	754 086	769 937	828 836	807 392	829 638	630 860	716 309	637 068	664 703	601 836
Pigs	326 652	527 531	570 507	586 621	639 416	684 708	706 472	989 316	1 311 250	1 014 629	1 492 506	1 684 709	1 716 438	1 330 461
Rabbits	643 927	418 361	423 492	451 396	744 972	792 895	864 696	993 685	1 105 750	1 203 485	1 354 703	1 387 669	1 347 860	1 264 734
Poultry	2 841 399	1 776 027	1 867 724	2 217 724	3 272 965	3 537 608	4 420 764	4 687 984	4 802 764	4 916 837	4 837 794	5 238 497	5 272 725	5 442 152
Animal Products (Tons)														
Product	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Milk	142 511	152 511	189 827	257 480	334 727	372 619	442 337	503 130	648 395	674 330	700 267	756 288	816 791	847 178
Meat	49861	52 226	54 780	56 900	65 863	70928	73633	76830	91 087	94 730	103 281	117 294	152 029	162 470
Fish	8 180	9.267	9.655	12 594	14 104	15 007	15 526	17 566	24 550	24 795	25 450	26 732	28 705	31 465
Eggs	2.452	1.536	1.620	2.327	3 268	5 203	5 736	6 324	6 757	6 892	6 973	7 347	7 475	7 936
Honey	1671	1 676	1 084	1 654	2 684	2 921	3 221	3 785	4 286	4 371	4 585	4 738	5 105	5 200
Hides & skin	2637	3.183	4.137	4 496	4 098	4 072	4 017	3 814	5 207	5 259	5 305	5 506	6 781	6 567

Meat Production By Animals														
Meat Production	2 005	2 006	2 007	2 008	2 009	2 010	011	2 012	2013	2014	2015	2016	2017	2 018
beef	20 215	21 796	24 767	24 889	25 462	27 538	28 311	29 021	33 807	36 850	40 166	43 781	47 721	50 107
caprine meat	12 324	13 390	13 690	13 420	14 195	15 005	15 836	16 748	19 953	22 347	25 029	28 033	31 396	32 966
ovine meat	3 968	4 166	4 375	4 573	4 823	5 064	5 317	5 583	5 802	6 498	7 278	8 151	9 130	9 586
poultry meat	7 379	7 748	8 136	8 443	11 970	13 718	13 846	14 384	16 727	20 072	24 087	28 904	34 685	37 806
Rabbit meat	1 390	1 460	1 533	1 610	1 890	2 375	2 863	3 156	4 893	5 627	6 471	7 442	8 558	9 413
Pork meat	3 585	3 666	3 812	3 965	4 523	7 228	7 460	7 938	9 905	11 886	14 263	17 116	20 539	22 592
TOTAL MEAT PRODUCTION	48 861	52 226	54 780	56 900	62 863	70 928	73 633	76 830	91 087	103 281	117 294	133 427	152 029	162 470

Food security: Consumption per person per year vis a vis need														
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	
Milk lt/pers/year	20,7	23,0	25,7	33,5	37,3	44,2	50,1	58,1	59,0	63,00	66,2	68	69,4	
Meat kg/pers/year	5,68	5,71	5,72	5,68	6,44	6,69	6,95	7,59	10,9	9,70	11,1	12,7	13	
Eggs kg /pers/year	0,2	0,2	0,25	0,36	0,47	0,52	0,57	0,59	0,60	0,61	0,62	0,63	0,63	
Fish Kg/pers/year	1,02	1,04	1,32	1,42	1,36	1,41	1,59	1,8	1,9	2,1	2,4	2,62	2,56	
Honey Kg/pers/year	0,20	0,11	0,17	0,22	0,26	0,29	0,34	0,39	0,41	0,43	0,45	0,47	0,53	

Annex 8: Social Protection Imihigo

IMPLEMENTATION REPORT OF SOCIAL PROTECTION IMIHIGO IN 2017/18 FY								
2017/2018 OVERALL TARGET: Reduced extreme poverty from 16.3% to 12%								
Output	Indicator	Baseline	Targets/Milestones				Activities to deliver output	Annual achievements
			Q1	Q2	Q3	Q4		
Outcome 1 : Increased coverage of social protection programmes to the extreme poor and vulnerable.								
Joint action plan to eliminate malnutrition implemented.	1) Number of cows distributed to Poor Families through Girinka program: (31,405 cows)	297,230 cows (end June 2017)	3,217	9,433	12,172	6,583	<p><u>Districts</u></p> <p>1) Identification of Girinka beneficiaries</p> <p>2) Preparation of tender document for heifers to be purchased</p> <p>3) Mobilize stakeholders to support Girinka program</p> <p>4) Organize Girinka week and Pass on events</p> <p>5) Monitor pass on activities</p> <p>6) Data compilation on cows to be distributed:</p> <p>Earmarked transfers & RDDP: 13,000</p> <p>Pass on, NGOs & Civil society</p> <p><u>MINAGRI (RAB)</u></p> <p>7) Elaboration of technical specifications for heifers to be purchased</p> <p>8) Technical assistance on heifers' selection and laboratory test</p> <p>9) Provision of Girinka package (Vaccines & medicines)</p> <p><u>MINAGRI/MINALOC</u></p> <p>10) Monitoring of Girinka program at decentralized level.</p>	<p>Total Cows distributed :</p> <p>30,616</p> <p>(i) Earmarked fund: 9,422</p> <p>(ii) Partners: 4,828</p> <p>(iii) Pass on : 13,607</p> <p>(iv) Local initiative: 2,759</p>

IMPLEMENTATION REPORT OF SOCIAL PROTECTION IMIHIGO IN 2017/18 FY

2017/2018 OVERALL TARGET: Reduced extreme poverty from 16.3% to 12%

Output	Indicator	Baseline	Targets/Milestones				Activities to deliver output	Annual achievements
			Q1	Q2	Q3	Q4		
Outcome 1 : Increased coverage of social protection programmes to the extreme poor and vulnerable.								
	2) 85,965 pupils benefited from one cup of milk program at school	Baseline : 86,980 pupils benefited from one cup of milk by end June 2017	85,965 pupils benefited from one cup of milk program at school	85,965 pupils benefited from one cup of milk program at school	85,965 pupils benefited from one cup of milk program at school	85,965 pupils benefited from one cup of milk program at school	<p><u>MINAGRI/RAB</u></p> <ol style="list-style-type: none"> 1. Ensure timely milk supply to schools 2. Follow up efficient milk distribution to the schools <p><u>MINEDUC</u></p> <ol style="list-style-type: none"> 3. Ensure that milk provided is consumed by targeted children. 4. Conduct impact assessment on one cup of milk program <p><u>MINALOC/MINAGRI</u></p> <ol style="list-style-type: none"> 5. Joint follow up with MINGARI and MINEDUC 	95,175 pupils benefited from 980,921 liters of milk distribution
	3) Number of households with kitchen garden (2,100,000 cumulative)	1,988,029 by end June 2017	Households mobilization	1,700,380 HHs with well maintained kitchen gardens	1,900,190 HHs with well maintained kitchen gardens	2,100,000 HHs with well maintained gardens	<p><u>MINALOC & DISTRICTS</u></p> <ol style="list-style-type: none"> 1) Mobilize households for kitchen gardens establishment. 2) Kitchen garden awareness 3) Monitoring of kitchen garden construction 4) Provide progress on Households (HHs) with well maintained kitchen gardens <p><u>RAB</u></p> <ol style="list-style-type: none"> 1. Train farmers through Farmer Field school 2. Joint follow up with Districts kitchen garden establishment 3. Provide technical support and guidelines <p><u>MINEDUC</u></p> <ol style="list-style-type: none"> 1. Mobilise school (primary and secondary) for kitchen garden establishment 	2,265,394 households were identified with well maintained kitchen gardens

IMPLEMENTATION REPORT OF SOCIAL PROTECTION IMIHIGO IN 2017/18 FY

2017/2018 OVERALL TARGET: Reduced extreme poverty from 16.3% to 12%		Targets/Milestones				Annual achievements		
		Q1	Q2	Q3	Q4			
Output	Indicator	Baseline	Q1	Q2	Q3	Q4	Activities to deliver output	Annual achievements
Outcome 1 : Increased coverage of social protection programmes to the extreme poor and vulnerable.								
	4) 1,000 MT of biofortified beans produced	7) 1,164 MT of biofortified beans produced end June 2017	(i) Follow up land preparation (ii) Identification of seeds multipliers	Follow up seed multiplication	600	400	MINAGRI (RAB) & Harvest plus 1) To avail timely basic seeds 2) Follow up multiplication process 3) Provide technical support to Districts and farmers DISTRICTS 4) Farmers mobilization 5) Selection of beneficiaries	772 MT of biofortified beans were produced
Incomes of poor HHs increased through provision small livestock	5) Number of poor HHs benefited from small livestock distribution-with Pigs (1,760)	1,287 households benefited from pigs by end June 2017	1) Identification of beneficiaries 2) Completion of the tendering process for pigs and pig sheds	Follow up on the construction of communal sheds "Ibukumba"	800 households received pigs	960 households received pigs	Districts: 1. Identification of beneficiaries (HHs in category 2. Follow up construction of hen houses and communal sheds "Ibukumba" 3. Conduct procurement process 4. Selection of performant small stock 5. Distribution of small livestock to the beneficiaries: 440 pigs (in Rusizi), 440 pigs (in Nyamasheke); 440 pigs (in Rubavu)and 440 pigs in Rutsiro 6. Distribution of small livestock to the beneficiaries: 20,000 poultry in Rubavu, Rusizi ,Nyamasheke & Rutsiro MINAGRI / (RAB) 1. Technical support to the beneficiaries 2. Elaboration of technical specification for small stock, feeds, drugs and construction materials 3. Availing medicine ,vaccination and animal feeds RCA 1. Coaching youth cooperatives 2. Youth cooperative organization and registration	1320 pigs were distributed to poor families as follow: Nyamasheke:440 Rutsiro:440 Rubavu:440
	6) 20 Youth cooperatives (identified from poor families) supported through poultry distribution (20,000 poultry)	27 youth cooperative benefited from 27,000 poultry distributed end June 2017	1) Identification of beneficiaries 2) Tendering process for hens and houses completed	Follow up construction of hen houses	10 youth cooperatives benefited from 10,000 poultry distributed	10 youth cooperatives benefited from 10,000 poultry distributed		15 youth cooperatives from poor families located in Nyamasheke, Rutsiro and Rubavu benefited from 15,000 poultry distribution

Annex 9: Institutional Imihigo

Output	Indicator	Baseline	Targets				Activities to deliver output	Annual achievements
			Q1	Q2	Q3	Q4		
Outcome 1: Increased Productivity and sustainable agriculture								
1.1. Agricultural productivity through land use and input use increased.	Quantity of improved seed distributed and used by farmers	Baseline (MT) Opvs maize: 213 Hybrid: 2,399.5 Wheat: 549.2 Soybean: 237.3	Season 18A (Q2) Opvs maize: 250 MT Hybrid: 2,000 MT Wheat: 200 MT Soybean: 200 MT	Season 18A (Q2) Opvs maize: 250 MT Hybrid: 2,000 MT Wheat: 200 MT Soybean: 200 MT	Season 18B (Q4) Opvs maize: 50 MT Hybrid: 1,000 MT Wheat: 400 MT Soybean: 300 MT Certified +QDS Irish potato seeds: 3,840MT	Season 18 B (Q4) Opvs maize: 50 MT Hybrid: 1,000 MT Wheat: 400 MT Soybean: 300 MT Certified +QDS Irish potato seeds: 3,840MT Number of cassava cuttings (certified+QDS): 200 million	1. Organize and monitor the agricultural inputs distribution system involving agro-dealers and districts agronomist. 2. Ensure timely supply of inputs to farmers 3. Contract seed companies and local seed multipliers to avail seeds on time	Opvs maize: 427.6 Hybrid maize; 3,067.3 Wheat: 775.1 Soybean: 885.4 Irish potato seeds : 24,000 Number of cassava cuttings : 328,348,020

Output	Indicator	Baseline	Targets				Activities to deliver output	Annual achievements
			Q1	Q2	Q3	Q4		
	Quantity of local seeds produced	Baseline:(MT) (i)Hybrid maize Basic seed : 7.5MT and certified: 140MT (ii)OPV maize Basic :12.5MT and Certified: 350MT (iii)Wheat Basic : 14MT and certified: 45.5MT (iv)Rice Basic : 10MT and certified: 170MT (v)Soybean Basic : 10 MT and certified: 164MT (vi) Irish potato Certified = 1,045MT			(i)Hybrid maize Basic seed :30MT Certified-1,000MT (ii) OPV maize Basic :10MT	1.Mobilize local companies and seed multipliers to invest in seeds production 2.Provide technical support to local seed producers 3.Control the quality of local seeds produced	(i)Hybrid maize Basic seed :18.7MT (4 MT achieved and 14.7 MT to be harvested by July 2018) Certified: 802 MT (168 MT achieved and 634 MT to be harvested by July 2018) (ii) OPV maize Basic :127.9 MT (117 MT achieved and 10.9 MT to be harvested by July 2018)	

Output	Indicator	Baseline	Targets				Activities to deliver output	Annual achievements
			Q1	Q2	Q3	Q4		
					Certified : 500 MT		Certified : 2,521 MT (1721 MT achieved and 800 MT to be harvested by July 2018)	
					(iii)Wheat Basic :15MT		(iii)Wheat Basic : 108.2 MT (32 MT achieved and 76.2 MT to be harvested by July 2018)	
					Certified : 200 MT		Certified : 495 MT (40 MT achieved and 455 MT to be harvested by July 2018)	
					(iv)Rice Basic :10 MT		(iv)Rice Basic :30 MT (10 MT achieved and 20 MT to be harvested by July 2018)	
					Certified: 200 MT		Certified: 440 MT achieved	
					(v)Soybean Certified : 200MT		(v)Soybean Certified : 250 MT(50MT achieved and 200 MT to be harvested by July 2018)	
					(vi)Beans Certified =700 MT		(vi)Beans Certified: 1263.2MT (313.2 MT achieved and 950 MT to be harvested by July 2018)	
					(vii)Irish potato Certified = 2,500MT		(vii) Irish potato Certified :24,542 MT	
					(viii)Cassava Certified :1,248,000		(viii)Cassava Certified cuttings:2,000,005	

Output	Indicator	Baseline	Targets				Activities to deliver output	Annual achievements
			Q1	Q2	Q3	Q4		
					Cuttings cassava QDS: 66,840,000 cuttings		Cuttings cassava QDS: 87,690,495	

Output	Indicator	Baseline	Targets				Activities to deliver output	Annual achievements
			Q1	Q2	Q3	Q4		
	Number of local fertilizer blending plants established	1 Fertilisers blending plant in place				One new blending plant established	<p>The construction works of the new blending plant will start in July 2018. So far key activities have been accomplished :</p> <p>(i)Promotion of blended fertilisers:</p> <ul style="list-style-type: none"> - Fertilisers blends for rice, maize, wheat and potatoes have been tested -Trials on Nitrogen,Phosphate and Sulfur (NPS) plus micronutrients for maize, rice and irish potatoes are completed (ii) Mobilization of Privates companies for investment in fertiliser blending -Office Cherifiers des Phosphate (OCP) from Morrocc mobilized and committed to establish the blending plant -Joint venture agreement between MINAGRI, APTC and OCP submitted to MINIJUST for non objection. -The business plan and feasibility study of the new fertilisers blending plant was developed and completed -The land for the new fertiliser blending plant acquired 	

Output	Indicator	Baseline	Targets				Activities to deliver output	Annual achievements	
			Q1	Q2	Q3	Q4			
1.2 Irrigation infrastructures increased	Percentage increase in Overall Progress towards completion of hillside irrigation schemes.	ETI-Mpanga (1,100Ha):(20%-Procurement procedures and Contract Signature and Contractors mobilization)	ETI-Mpanga: 25%	ETI-Mpanga: 35%	ETI-Mpanga: 40%	Mpanga (1,100Ha): 50%	<p>1. Prepare Terms of Reference.</p> <p>2. Recruit of the contractor.</p> <p>3. Contract preparation, signature,</p> <p>4. Supervise and Monitor</p> <p>-Site installation</p> <p>-Topographic survey (layout map and profiles for pipe alignment)</p> <p>-Construction of Intake/pump house.</p> <p>-Construction of water reservoirs</p> <p>-Preliminary establishment of water distribution network. (pipe network)</p>	<p>(i)Mpanga (1,100Ha): 34%</p> <p>The following activities were completed</p> <ul style="list-style-type: none"> - Topographic Survey and Soil investigations - Preparation and submission of the detailed designs: - Establishment of Site facilities - Construction of access roads to Intake -Procurement and supply of irrigation equipments on site - Works at storage tank stands - Electrification of the irrigation site 	
			ETI-Mahama-1 : 12%	ETI-Mahama-1 : 15%	ETI-Mahama-1 : 20%	ETI-Mahama-1 (1,750Ha): 25%			<p>(ii)Mahama-1 (1,750Ha): 20%</p> <ul style="list-style-type: none"> -Preparation of Tender document -Advertisement of tender -Evaluation of Bids -Contract Signed
			ETI-Mahama-2 : 7%	ETI-Mahama-2 : 10%	ETI-Mahama-2 : 12%	ETI-Mahama-2 (2,500Ha): 15%			

Output	Indicator	Baseline	Targets				Activities to deliver output	Annual achievements
			Q1	Q2	Q3	Q4		
1.3 Irrigation Studies carried out	Percentage progress of Irrigation Studies conducted for Hillside Irrigation development by end June 2018.	Baseline Mahama-2: 90% Gabi:87% Rilima:60% Rweru:75% Cyohoha South:60%	Mahama-2: 100% Gabi:95% Rilima:65% Rweru:80% Cyohoha South:65%	Gabi: 100% Rilima:70% Rweru:90% Cyohoha South:75%	Rilima:90% Rweru (4,797Ha): 100% Cyohoha South:90%	Rilima (2,835Ha): 100%; Cyohoha South (3,000Ha): 100%	Mahama-2: 100% completed next is tendering for implementation Gabi: Progress level at 100% : Detailed study report approved and validated Rilima: Progress level at 80%. The final feasibility was completed, the next stage is to submit the detailed report.. Rweru: Progress level at 100% Feasibility study report was completed and the corrected detailed report was submitted. Cyohoha South: Progress level at 80%; The feasibility study was completed, the next stage is to submit the detailed report Progress level stands at 90%	Supervision and monitoring of study activities
	Irrigation Master plan updated end June 2018	ToRs developed	Tendering process	Follow up study development	Follow up study development	Presentation and validation irrigation Master plan	1. Establish a web-based Inventory and Database of irrigation potential in Rwanda; 2.Acquire Digital Maps showing various categories of irrigation potential 3. Carry out Field Survey and Investigations data	The study development of irrigation master plan is ongoing. The inception report was submitted and validated

Output	Indicator	Baseline	Targets				Activities to deliver output	Annual achievements
			Q1	Q2	Q3	Q4		
1.4 Increased area under mechanization	Mechanization Center of excellence established at 40% of progress level	5% of progress	10%	20%	40%	50% Overall Progress by end June 2018.	<p>Establishment of centre of Excellence in Farm Mechanization stands at 35%:</p> <ul style="list-style-type: none"> -Construction of Administrative Building: 10% - Building on Farm Mechanization: 50% - Installation and Commissioning of farm mechanization equipment/ machinery: 40% - Land Development of Demonstration Farm: 50% 	
	New 5,000 ha of land mechanized by end June 2018	34,000 ha	2,000	1500		500	<p>6,320 ha of land mechanized</p> <ol style="list-style-type: none"> 1. Deliver tractor and other farm machinery hiring services 2. Initiate subsidy on purchasing and hiring of agricultural farm machinery 3. Monitor and evaluate mechanization operations 4. Promote and facilitate private sector investment in mechanization 5. Repair and maintain of existing fleet of farm machinery 6. Purchase agricultural equipment 7. Build capacities (trainings and demonstrations) 	

Output	Indicator	Baseline	Targets				Activities to deliver output	Annual achievements
			Q1	Q2	Q3	Q4		
Outcome 2: Increased Productivity and sustainable animal resources								
2.1 Bovine genetics improved	Nitrogen machine purchased and installed	Baseline: 1 Nitrogen Plant	Procurement process	Nitrogen Plant purchased and installed		Construct a facility to accommodate the new Nitrogen machine Follow up procurement process	Installation of Nitrogen machine was completed, testing done and the plant commissioned in the Southern Province (Rubona) The liquid nitrogen is being produced	
Outcome 3 : Enhanced food Security and Nutrition								
3.1 Food security enhanced	MT of maize and beans stored as a strategic food reserve	15,000MT (not cumulative)			7500 (5000 MT of Maize & 2500 MT of beans)	7500 (5000 MT of Maize & 2500 MT of beans)	Maize and beans stored as National strategic food reserve: 11,682.5 MT were stored composed of 7,571.4 MT of maize and 4,111.1 MT of beans	
						1. Collaborate with Private Sector to generate market intelligence. 2. Provide Incentive to access the East African Market trade through EAX. 3. Follow up farming contract with NSGR		

Output	Indicator	Baseline	Targets				Activities to deliver output	Annual achievements
			Q1	Q2	Q3	Q4		
Outcome 4: Transformed Agriculture through Research and Extension services								
4.1. High yielding varieties for priority crops developed and disseminated	Selection, yield trails, seed increase	1-Maize: 9 hybrids pre-released 2-Rice: 4 varieties pre-released 3-Wheat: 10 varieties released 4. Cassava : 4 varieties pre-released 5. Soybean: 2 varieties pre-released 6.Irish Potato: 5 varieties pre-released	Enriching genetic diversity through Introduction of new genetic material from international sources	Selection, yield trails, seed increase	Conduct participatory variety trials	1-Maize: 30 new hybrids evaluated 2-Soybean: 21 advanced breeding lines evaluated 3-Wheat: 21 varieties evaluated 4. Irish potato: 6 varieties evaluated 5. Cassava 17 clones evaluated 6. Beans 5 varieties released 7. Banana 29 new varieties evaluated (NARITA, PITA, TMPX introductions) 8. Rice At least 10 varieties evaluated 9. Coffee 35 new varieties evaluated	1. Establish On-farm trials 2. Carry out Seed multiplication 3. Conduct participatory variety trials for locally testing superior lines for milling and baking quality 4. Carry out Micro propagation in tissue culture laboratory	i)Maize: 52 new hybrids including 14 of mid altitude and 38 highland hybrids evaluated. 60 inbred lines evaluated ii)Soybean: 42 lines are under advanced trials (yield evaluation), that have been selected from 354 lines iii)Wheat: 10 best performing varieties completed on farm trials and are now ready for release iv)Irish potato: 52 clones evaluated, including 5 with postharvest processing qualities that are ready for release v) Cassava 238 clones have been evaluated, and 5 clones are advanced for release, at on farm trial stage, while 6 are at on station multilocation trial stage.The rest are still under selection.18 new clones have been introduced from Latin America, in addition to 17 clones introduced from IITA.

Output	Indicator	Baseline	Targets				Activities to deliver output	Annual achievements
			Q1	Q2	Q3	Q4		
							vi) Beans 5 varieties are ready to be released. 2026 lines under selection trials. vii)Banana 29 new varieties (NARITA, PITA and TMPX) evaluated viii)Rice 113 lines evaluated, 5 newly varieties introduced, 76 clod tolerant varieties, 31 lines at early selection stage ix)Coffee 82 new varieties under multi-location trials	

Output	Indicator	Baseline	Targets				Activities to deliver output	Annual achievements
			Q1	Q2	Q3	Q4		
4.2. Technologies for management of emerging pests and diseases developed and disseminated	Type of technologies developed/disseminated	Disease diagnostics for cassava Gemini viruses, Maize lethal necrosis	Genetic characterization of the Fall armyworm pest occurring in Rwanda conducted	Effective and efficient pesticides for the control of armyworm tested, re-sults disseminated	Early warning system for management of the Fall armyworm tested (use of pheromone traps)	Integrated Pest Management for the Fall armyworm tested	<ol style="list-style-type: none"> 1. Integrated Pest Management of the Fall Armyworm has been tested. The Push Pull technology has been adapted, in collaboration with ICIPE scientists (multilocation trials). 2. Early warning system for the Fall army worm has been tested, using pheromone traps 3. A scientific paper on occurrence of Fall armyworm in Rwanda has been published 4. Technologies for mass production of clean planting material (tissue culture and macropropagation) have been optimized, with production of 59,532 plantlets of cassava, 102,000 of banana and 62,000 of sweet potato 	

Output	Indicator	Baseline	Targets				Activities to deliver output	Annual achievements
			Q1	Q2	Q3	Q4		
4.3. Research infrastructure upgraded	Number of research infrastructure facilities developed/upgraded	(i) 3 screen houses and one aeroponic facility rehabilitated in FY 2016/17 (ii) One new screen house constructed in FY 2016/17 (iii) Irrigation facilities: three farm ponds with sprinkler irrigation constructed (7 ha irrigated) (iv) Feasibility studies for rehabilitation of 4 stations completed (v) New lab equipment acquired (vi) 7 new contractual lab technicians hired	4 screen houses rehabilitated	New lab equipment procured	4 new screen houses constructed	Irrigation facilities developed (Rubona Station): from 7ha to 20 ha irrigated	1. Development of ToRs and technical specifications 2. Monitoring and Evaluation	4 new screen houses constructed: Conventional greenhouses of Gakuta , Rubona , Musanze , and one Musanze aeroponic greenhouse were rehabilitated and currently are under use. Irrigation facilities were established at Rubona RAB station. These facilities cover 32 ha.

Output	Indicator	Baseline	Targets				Activities to deliver output	Annual achievements
			Q1	Q2	Q3	Q4		
4.4. Genetic resources conserved to reduce agrobio-diversity losses	Number of genetic resources conserved	900 plant by end of June 2017	30	30	60	30	<p>(i) 171 accessions of sweet potato, 201 accessions of coffee, 104 accessions of banana and 24 species of horticultural fruits (2 species of apple, 6 species of mango, 6 species of orange and 10 species of avocado) were maintained in field genebanks for conservation purposes.</p> <p>(ii) 4 of neglected and underutilised plant genetic species were collected and processed for conservation (2 accessions of taro, 3 accession of Yam, 4 accessions of fingerling potatoes and 8 accessions of finger millet)</p> <p>(iii) Passport data for 43 collected plant genetic resources were created for better management</p> <p>(iv) 48 accessions of different plant genetic resources were collected</p>	

Output	Indicator	Baseline	Targets				Activities to deliver output	Annual achievements
			Q1	Q2	Q3	Q4		
		20 forestry	6		4	5	<p>29 forestry genetic resources collected, seven were conserved as soft seeds (3 of them were threshed and dried, 4 were only sorted) while 22 accessions were conserved before pre-drying, threshing, cleaning, drying and sorting. 12 different forestry genetic resources accessions were tested for germination, properly filled on their testing sheets forms</p> <p>12 accessions of forestry genetic resources were collected.</p>	
		88 animal		10 local animal genetic resources morphologically characterized	5 local animal genetic resources morphologically characterized	5 local animal genetic resources morphologically characterized 100 local large stock genetic resources maintained	<p>(a) 16 new calves Inyambo born from local semen used in Karama farm where 7 male and 9 female were characterized and 16 blood samples were collected and treated according to the normal process.</p> <p>(b) Two young bulls (559803 and 559813) at Masaka bull station which are under the process of semen production are being followed and monitored on regular basis</p>	

Output	Indicator	Baseline	Targets				Activities to deliver output	Annual achievements
			Q1	Q2	Q3	Q4		
4.4 Access to extension services- strengthened- (Through TWIGIRE Muhinzi)	1. Increased number of households reached through Twigire Muhinzi (1,600,000)	Baseline: 1,584,776 Farmers		900,000		700,000	1. Farmer mobilization through Twigire Muhinzi: 2. Organization of farmers into groups (Twigire groups and FFS groups): 3. Building capacity of frontline extension agents to serve farmers in groups 4. Follow up farmer cooperatives registration process, 18,000 demo and 15,000 FFS establishment 5. Train farmers promoters	1,738,764 Farmers have been reached
	2. Increased number of demo plots (25,000) and FFS plots (15,000) established and used for farmers learning	15,381 Demo plots established		8500		9500		18,956 demo plots established in 18 A& B Season
4.5. Highly yielding forage germ plasm for climate smart agriculture developed.	Number of forage varieties (drought tolerant/acid soil adapted/low GHG) characterized and disseminated	12,178 FFS plots established		7500		7,500		14,886 FFS plots established in 18 A& B Season
		7 germ plasmas characterized	Procurement of research supplies Experiment design	Germ plasma characterization	Germ plasma characterization	3 varieties characterized Feeds and nutrient database updated Results disseminated	1. Characterization 2. Updating feeds and their nutrients database 3. Dissemination	(i) 4 forage varieties characterized (Brachiaria hybrids Caltivars CAYMAN and MULATO II, plus Panicum coloratum and Desmodium distortum) (ii) Feeds and nutrient database updated

Output	Indicator	Baseline	Targets				Activities to deliver output	Annual achievements
			Q1	Q2	Q3	Q4		
4.6. Assisted reproduction technologies (Multiple Ovulation and Embryo Transfer/MOET) developed for cattle improvement	Number of assisted reproduction technologies evaluated	2 calves reproduced by Embryo Transfer, 10% success rate	Procurement MOET supplies Experiment design	Identification of donors and surrogates 20 embryos purchased 6 staff trained on flushing	Five embryos transferred	Report produced	(i) 14 donors were flushed at Songa and Kinigi (ii) 17 embryos were obtained; 10 embryos were good, 7 were unfertilized (iii) Synchronized recipient cows responded at 58.6 rate with good corpus luteum. 51 recipient cows, with fresh embryos transferred to recipients and 45 recipient cows received frozen and thawed previously conserved embryos; pregnancy test awaited. (iv) 6 staff trained in collaboration with Jersey Inka Nziza project	
Outcome 5: Increased export promotion and Enhanced agribusiness environment for agricultural enterprise								
5.1 Increased area under flower production	12 ha of flower planted in green houses in Gishari	18 ha of flower planted	Tendering process	2	5	5	2 ha of flower planted in green houses	
							Support and follow up the expansion of flower production in Gishali.	

Output	Indicator	Baseline	Targets				Activities to deliver output	Annual achievements
			Q1	Q2	Q3	Q4		
5.2 Horticulture (Fruits and Vegetables) Accelerated	Volume in MT of exported fruits and vegetables (32,000 MT)	Baseline: 25,931 MT (not cumulative)	8500	7,000	9000	7500	<p>1. Map production areas for horticulture destined for region and International markets.</p> <p>2. Support market linkages on local, region and international market for horticulture producers.</p> <p>3. Ensure the Cold chain infrastructure is well maintained and functional.</p> <p>4. Strengthen the Rwanda Horticulture Interprofessional Organization and Horticulture export Association of Rwanda to grow the sector.</p> <p>5. Buy Shares in Gashora Development Project</p>	<p>Cumulatively 29,466 MT of fruits and vegetables were exported</p> <p>800 ha suitable for mango & macadamia fruits were mapped in Kayonza</p> <p>Five horticulture exports (Garden fresh, proxifresh, nature fresh, Esline, and freshpark) were supported to attend Fruit Logistica exhibition in Germany for market linkages.</p> <p>Quarterly maintenance of cold chain infrastructures is conducted.</p> <p>Rwanda Horticulture Interprofessional Organization and Horticulture export Association of Rwanda were supported in horticulture market linkages through exhibitions and trade faires.</p> <p>Payment of 49% of the government contribution share was done</p> <p>Irrigation facilities already installed. Land preparation started</p>

Output	Indicator	Baseline	Targets				Activities to deliver output	Annual achievements
			Q1	Q2	Q3	Q4		
5.3 Sericulture business developed	Volume in MT of silkworm fresh cocoons production increased (15 MT)	Baseline: 8.6 MT end June 2017	2	5	3	5	<p>1. Mobilize and support farmers to plant mulberry on new 300 ha on top of existent 1891.5 ha</p> <p>2. Support farmers with planting materials for mulberry, silkworm eggs and extension services.</p> <p>3. Support the organization and coordination of sericulture value chain.</p> <p>4. Follow up construction of silk reeling Factory at 40%</p>	<p>Cumulatively 12.67 MT of cocoons were produced.</p> <p>397 Ha of mulberry planted and gap filling done on 527 Ha</p> <p>609 boxes of fresh cocoons were distributed for reeling, 12,293.68 cuttings were distributed for plantings, 46 people were supported with iron sheets while 51 people received financial support</p> <p>Contract farming between all Farmers and HE works signed</p> <p>Silk Factory: 68% of the civil works completed: Office block, Factory floor done.</p>

Output	Indicator	Baseline	Targets				Activities to deliver output	Annual achievements
			Q1	Q2	Q3	Q4		
Outcome 6: Improved Post Harvest Infrastructures								
6.1 Post Harvest infrastructures increased	Drying ground constructed (10)	Baselines: 259 drying grounds	Tendering process	Follow up construction works	10	Follow up drying grounds construction Provide technical support	9 drying grounds completed and 7 under construction: (i) 3 drying ground located in Kayanza completed (ii) 3 drying grounds in Ngoma: Completed: 100% (iii) 3 drying ground located in Nyabirande -Ndongozi / Burera completed (iv) 7 under construction with progress level of 75% in Nyanza and Migina	
	Horticulture Collection centers constructed (13)	Baseline: 4 Collection centers	Tendering process	Follow up construction works	5	Follow up collection centers construction Provide technical support	9 Collection center completed and 5 under construction: (i) 4 in Nyirabirande-Ndongozi / Burera: Completed 100% (ii) 5 collection centers with cold room completed 100% (4 in Muyanaza and 1 in Gatsibo) (iii) 5 collection centers with cold room under construction. The progress stands at 70% (1 in Rwamagana, 1 in Karon-gi, 1 in Ngoma, 1 in Muyanaza and 1 in Karongi)	

Output	Indicator	Baseline	Targets				Activities to deliver output	Annual achievements
			Q1	Q2	Q3	Q4		
Outcome 7: Strengthened Institutional Capacity								
7.1 Reporting system improved	Quarterly and annual report generated from MIS system	Baseline: Trained personnel in the use of MIS: - Directors of Agriculture and Natural Resources: 30 - RAB zone: 4 - RAB headquarter: 2 - NAEB: 1 - SPIUs : 6 (IFAD, WB and ADB) - MINAGRI: 5	1	1	1	1	1. Train relevant staff on the use of the MIS (90 from Districts & 20 from Minagri, Minagri projects and Agencies) 2. Supervise Data entry 3. Analyze produced reports	Imihigo reports are being generated from MIS, The System has been owned by Districts staff and Minagri Agencies. The relevant staffs were trained.
7.2 Key performance Indicators regularly updated through Government Command Center	% of key performance indicators in the Government Command Centre (GCC) updated regularly	Based on the current situation	Quarterly update of KPI	Quarterly update of KPI	Quarterly update of KPI	100%	1. Provide data related to progress against KPIs for the last five years. 2. Collect and analyze data to feed KPIs into GCC on a quarterly basis	Data collection to feed in KPIs were collected and feed into GCC.

Output	Indicator	Baseline	Targets				Annual achievements
			Q1	Q2	Q3	Q4	
Outcome 8: Sanitary, phytosanitary and food safety (SPS) system Strengthened							
8.1 Quality and safety of agrochemicals and agricultural products strengthened	Agrochemicals and agricultural/livestock product dealers inspected and/or certified for Sanitary and Phytosanitary compliance (1,000)	685	200	300	300	200	<p>Total inspected businesses: 1283</p> <p>(i) 508 Agrochemical shops/premises were inspected of which 127 were registered.</p> <p>(ii) 473 Agro-dealers were listed of which 123 were registered.</p> <p>(iii) Plant pest and disease surveillance conducted :52 farms for horticulture crops for export were inspected;</p> <p>(iv) Market surveillance conducted: 103 importers/stores for dried cassava, maize grains, located in Kigali were inspected and 103 samples were collected and tested in laboratory for safety compliance;</p> <p>(v) 237 Dairy businesses/ dealers (MCCs, Milk transporters, milk kiosks and SMEs) were inspected;</p> <p>(vi) 323 Meat-related businesses/ dealers (abattoirs/ slaughterhouses, meat transporters and butcheries) were inspected;</p>
							<p>1. Inspect agrochemicals</p> <p>2. Register new agrochemicals, agrodelears and premises</p> <p>3. Inspect , certify and permit agricultural commodities for export/import and their premises</p> <p>4. Conduct Pest Risk Analysis and Disease Risk Analysis of imported plants / plant products and animal products</p> <p>5. Conduct market surveillance</p> <p>6. Organize plant pest and disease surveillance</p> <p>7. Inspect abattoirs and butcheries to verify compliance with legal and standards requirements;</p> <p>8. Inspect Honey collection and processing centers</p> <p>9. Sample and test honey for pesticides, antibiotic and heavy metals residues;</p> <p>10. Inspect MCCs, Milk Transporters, Milk Kiosks</p>

Annex 10: Agricultural Joint Imihigo

2017/18 OVERALL TARGET: Agricultural annual growth from 5% to 7%								
Output	Indicator	Baseline	Targets/milestones				Activities	Annual achievements
			Q1	Q2	Q3	Q4		
OUTCOME 1: Increased Agricultural Productivity								
2017/18 Targets: Agricultural production for priority crops increased by end June 2018								
1.1. Agricultural productivity through land consolidation and input use increased.	Average Yield on consolidated lands (MT/Ha)	[Baseline end June 2017] Rice: 6.2 Wheat: 3.35 Maize: 5 Irish Potatoes: 30.7 Cassava: 25 Bush Beans: 1.7 Climbing Beans : 3.2 Soybean: 2 Banana: 18.6				Rice: 7 Wheat: 3.5 Maize: 5.5 Irish Potatoes: 31.8 Cassava: 26.3 Bush Beans: 2.2 Climbing Beans : 3.5 Soybean: 2.5 Banana: 19.7	RAB 1. Timely supply of inputs to all farmers in seasons A, B and C 2. Train farmers on good agriculture practices 3. Build capacity of extension agents 4. Weigh yields 5. Report on obtained yields DISTRICTS 1. Mobilize farmers for season preparation to ensure access to agriculture inputs 2. Monitor season implementation 3. Farmers mobilization for land consolidation 4. Monitor agro dealers to ensure timely inputs delivery to farmers 5. Prepare and organize seasonal meetings MINICOM (RCA) Organize farmers into cooperatives PSF Avail inputs Mobilize farmers for season preparation	Average Yield on consolidated lands: Rice: 5.6 Wheat: 2.3 Maize: 3.7 Irish Potatoes: 22 Cassava: 20.7 Bush Beans: 1.3 Climbing Beans : 2.5 Soybean: 1.4 Banana: 19.7

Output	Indicator	Baseline	Targets/milestones				Activities	Annual achievements
			Q1	Q2	Q3	Q4		
	Area under land consolidation (Ha)	Season A:	Season A:				Season A(Q2):	
		Maize: 294,027	Maize: 252,131				Maize: 336,190.6	
		Beans: 367,426	Beans: 272,948				Beans: 450,337.9	
		Irish potatoes: 63,274	Irish potatoes: 65,822				Irish Potatoes: 98,735.2	
		Wheat: 6,770	Wheat: 6,803				Wheat: 15,583.6	
		Cassava: 42,031	Cassava: 106,713				Cassava: 96,575	
		Rice: 9,566	Rice: 14,509				Rice: 20,120.6	
		Soybean: 11,173	Soybean: 13,573				Soy bean: 11,940.4	
		Season B:	Season B:				Season B(Q4):	
		Maize: 64,153	Maize: 68,372				Maize: 72,395.3	
		Beans: 353,181	Beans: 278,704				Beans: 317,072	
		Irish potatoes: 59,086	Irish potatoes: 63,390				Irish Potatoes: 64,789.3	
		Wheat: 41,936	Wheat: 37,415				Wheat: 36,571	
		Rice: 13,456	Rice: 12,366				Rice: 15,745.9	
		Soybean: 12,178	Soybean: 23,351				Soybean: 15,737	
							Fertilizers (MT) Distributed (Season 2018B) * DAP: 4,975 * UREA : 2,388.7 * NPK: 5,475.8 * KCL+Blends: 24.4 Tot: 12,863.5 MT	

Output	Indicator	Baseline	Targets/milestones				Activities	Annual achievements
			Q1	Q2	Q3	Q4		
	MT of subsidized fertilizers bought by farmers by end of June 2018	Food crops: Baseline (MT) DAP: 9,872 UREA : 6,049 NPK: 12,367 KCL: 111 Blends: 143 Tot:28,542		Season A (Q2) DAP: 10,000 UREA : 4,500 NPK: 10,000 KCL: 80 Blends: 100 Tot:24,680 MT		Season B (Q4) DAP: 5,000 UREA : 3,000 NPK: 6,000 KCL: 50 Blends: 50 Tot:14,100 MT	(i) Fertilizers used by Farmers in Season A (Q2) DAP:8,818.30 UREA :5,164.60 NPK:7,547.3 KCL& Blends:1,239.3 Tot:22,769.50 MT (ii) Fertilizers used by Farmers in SeasonB (Q4) DAP:9159.7 UREA :6685 NPK:15,982.2 KCL& Blends:554.97 Tot:32,381.87 Q2 & Q4: 55,151.37 MT of fertilizers were applied.	
		Baseline: Cash crops: 12,901 MT		5,000	1,800	4900	12,725.9 MT of fertilizers applied on cash crops	
	MT of lime on acidic soils subsidized (MT bought by farmers) by end of June 2018	Baseline: 24,362 MT		12,000		10,000	Total lime applied: Q2: 10,864.5 MT of lime applied Q4:8,943.8 MT Total :19,808.3 MT	

Output	Indicator	Baseline	Targets/milestones				Activities	Annual achievements
			Q1	Q2	Q3	Q4		
1.2 Radical terraces schemes valorized	Ha of radical terraces valorized (4,113)	Baseline: 4,279 ha		2500		1,613	<u>Districts</u> 1. Identify the Sites 2. Negotiate framework contracts with companies / cooperatives for compost and lime supply 3. Mobilize farmers for season preparation and growing of priority crops 3. Follow up compost production (36,825 MT) 4. Regural monitor lime and compost application by farmers <u>RAB</u> 1. Timely avail improved seeds to farmers 2. Provide technical support in compost production and lime application 3. Closely follow up with the districts compost and lime use by farmers	6,272 ha of radical terraces were valorized
	MT of compost produced and utilized by farmers (36,825)	Baseline: 146,652.8 MT		16,500		20,325	40,070 MT of compost used	

Output	Indicator	Baseline	Targets/milestones				Activities	Annual achievements
			Q1	Q2	Q3	Q4		
1.3. Soil erosion infra-structures increased	Ha of radical terraces (RT) constructed (New 3,000)	110,041.4 ha Baseline by June 2017	500	1,000	800	700	RAB 1. Joint planning for soil erosion control to set implementation modalities; 2. Design implementation modalities and guidelines for land husbandry; 3. Provide technical support to districts and supervision for the establishment of radical and progressive terraces 4. To support financially the construction of RT: LWH/RSSP: 2,000 ha RAB: 200ha Districts: 800 ha (earmarked transfers) Progressive terraces: RAB: 400ha LWH/RSSP: 2470 ha MINALOC (LODA) Work closely with the districts to construct RT and PT through VUP program Districts 1. Conduct mobilization campaigns for soil erosion control activities through community works 2. Mobilize other stakeholders at districts level	Q1: 1,292 ha of radical terraces constructed Q2: 1,673.4 ha of radical terraces constructed Q3: 1,562.7 ha of radical terraces constructed Q4: 3830 ha Tot: 8,351 ha of radical terraces constructed
	Ha of progressive terraces (PT) developed (new 2,870)	923,604 ha Baseline by June 2017	700	700	800	670	42,454 ha of progressive terraces developed including new development and rehabilitation.	

Output	Indicator	Baseline	Targets/milestones				Activities	Annual achievements
			Q1	Q2	Q3	Q4		
1.4. Irrigation infra-structures increased	Ha under marsh-land irrigation reha-bilitated (1,288)	Baseline : 1186.2 ha reha-bilitated 36,521.2 ha de-veloped		435	268	585	<p>DISTRICTS</p> <p>1. Mobilize farmers and Fol-lowing up marshland rehabili-tation works</p> <p>MINICOM (RCA)</p> <p>Organize farmers into coop-eratives</p> <p>RAB</p> <p>Follow up marshland Marsh-land rehabilitation works: 1,288 Ha (Rwamagana: 585 ha, Migina: 435 ha & Kabuye: 268 Ha)</p>	<p>(i) 435 ha of Migina marsh-land and 268 ha of Kabuye completed</p> <p>(ii) Rehabilitation works of Rwamagana branches stands at 90%</p> <p>Tot:703 ha of marshland rehabilitated</p>
	Ha under hillside irrigation(1,367)	7,413 ha		267	1100	<p>RAB</p> <p>1. Design and implement hillside irrigation works: 1,367 ha (hillside irrigation) (Muyanza: 1,100 ha and Rwamagana: 267 ha</p> <p>2. Provide technical assistance and monitoring for hillside development works</p> <p>DISTRICTS</p> <p>1. Farmers mobilization and Following hillside develop-ment works</p> <p>2. Facilitate compensation process</p>	<p>Hillside irrigation develop-ment works completed:</p> <p>(i)Rwamagana-34: (267 Ha)</p> <p>Dam construction works completed, and other re-lated hillside development works completed.</p> <p>(ii) Muyanza hillside irriga-tion infrastructures develop-ment completed.</p> <p>Tot:1,367 ha of hillside developed</p>	

Output	Indicator	Baseline	Targets/milestones				Activities	Annual achievements
			Q1	Q2	Q3	Q4		
	Ha developed for small scale irrigation (2,000)	4,574 ha	800	300	400	500	<u>RAB</u> 1. Joint planning with RAB for SSIT to set implementation modalities; 2. Implement Small Scale irrigation technologies development 3. Provide technical assistance and monitoring <u>Districts</u> 1. Joint planning with RAB for SSIT to set implementation modalities; 2. Mobilize farmers for SSIT adoption 3. Identify SSIT beneficiaries 4. To monitor regularly district service provider	2,300 ha under SSIT irrigation

Output	Indicator	Baseline	Targets/milestones				Activities	Annual achievements
			Q1	Q2	Q3	Q4		
OUTCOME 2: Increased Animal Resources productivity								
2017/18 Targets: Increased animal protein production and consumption by end June 2018								
2.1. Bovine genetics improved	94,042 cows inseminated	Baseline end June 2017: 77,221 cows (not cumulative)	19,592	23,510	27,429	23,511 <u>RAB</u>	104,373 cows inseminated	
	38, 117 AI born calves registered by end June 2018	Baseline end June 2017: 27,386 calves (not cumulative)	8,860	10,632	10,632	7,993	41,873 AI born calves were registered	
						<ol style="list-style-type: none"> 1. Ensure bulls health and nutrition 2. Replace of Masaka bulls to improve quality of semen and genetic level 3. Produce and process quality control of semen 4. Rehabilitate of bull pens and lab maintenance 5. Ensure and Monitor supply of semen and AI inputs to public and private inseminators 6. Organize and facilitate AI campaign to treat reproductive problems 7. Follow up the insemination of targeted cows 8. Train on herd book and animal recording Districts <ol style="list-style-type: none"> 1. Purchase of Semen 2. Facilitate inseminators for insemination and recording 3. Insemination of targeted cows (120,000 cows across the country) 4. Monitor and evaluate of pregnant cows 5. Register AI born calves 		

Output	Indicator	Baseline	Targets/milestones				Activities	Annual achievements
			Q1	Q2	Q3	Q4		
2.2 Animal health improved	433,787 of Animal vaccinated against BQ	390,000 against Black quarter-anthrax,		247,878	185,909		<u>RAB</u> 1. Provide technical support 2. Timely avail vaccines to the districts 3. Monitor vaccination campaign	616,892 Vaccinated against Black Quarters
	546,156 of Animal vaccinated against LSD	320,000 against LSD	273,078			273,078	<u>DISTRICTS</u> 1. Mobilize farmers to vaccinate their animals 2. Organize vaccination campaign 3. Train farmers in basic skills of treating simple diseases in first aid techniques	761,593 cows vaccinated against LSD
	57,943 of Animal vaccinated against RVF	10,000 against RVF	23,177			34,766		
	15,000 of Animal vaccinated against Brucellosis	12000 Against brucellosis	3,000	3,000	5,000	4,000	<u>PSF (Rwanda Veterinary Council)</u> Facilitate vaccination campaign	38,029 vaccinated against Brucellosis
	65,950 of Animal vaccinated against FMD	25,000 Against FMD	38,794	27,156				142,557 vaccinated against FMD

Output	Indicator	Baseline	Targets/milestones				Activities	Annual achievements
			Q1	Q2	Q3	Q4		
2.3. Fish production increased	30,000 MT of fish produced	Baseline: 26,528 MT (not cumulative)	6000	7500	9,000	7500	<p>RAB</p> <ol style="list-style-type: none"> 1. Strengthen fish farming; 2. Restock lakes; 3. Restock fish ponds 4. Monitor the production of 30,000 MT of fish 5. Provide incentive and stimulate investors <p>Tot :31,523 MT of Fish produced</p> <p>RDB registered one investor in fish farming (Kivu Lake, Rusizi District). Facilitation now being provided to set up a tilapia processing facility and export of fillets to EU.</p>	<p>Q1:3,504 MT of Fish produced</p> <p>Q2:6,098 MT of Fish produced</p> <p>Q3:7,804 MT of fish produced</p> <p>Q4:14,117 MT of fish produced</p>
<p>Outcome 3 : Increased growth of Agricultural Exports</p>								
<p>2017/18 Targets:</p> <p>Increased growth of traditional exports by 21%, Increased growth of non-traditional exports by 38%</p>								

Output	Indicator	Baseline	Targets/milestones				Activities	Annual achievements
			Q1	Q2	Q3	Q4		
3.1 Volume of exported refined pyrethrum products increased	Volume of refined pyrethrum exported (20 MT)	Baseline: 11 MT	3	4	6	7	SOPYRWA & Districts (Rubavu, Nyabihu, Musanze, - Burera) 1. Mobilize farmers to rotate pyrethrum with Irish potato 2. Monitor the supply of dried pyrethrum flowers <u>NAEB</u> 3. Diversify market penetration in EU, Asia and USA	23.4 MT of refined pyrethrum were exported
3.2 Gishali Flower Park (by Bella Flowers Ltd.) operational	Ha of flowers planted in green houses (12)	18 ha of flower planted	Tendering process	2	5	5	<u>NAEB</u> 1. Follow up flower production	1,589 MT of dried flowers were delivered to SOPYRWA. Market accessed are in USA and ITALY 2 ha of flower planted in green houses. This activity was not achieved due to challenges in tendering process where it was again re-advertised.

Output	Indicator	Baseline	Targets/milestones				Annual achievements
			Q1	Q2	Q3	Q4	
	Number of stems exported (10,800,000)	4,597,790 stems	2,700,000	3,000,000	3,000,000	2,100,000	<p><u>Investor:</u> 1. To initiate plantation of flowers on 18 ha (Bella Flowers)</p> <p><u>MINICOM</u> 1. Negotiate better air transport tariff 2. Facilitate access to export growth fund via BRD and BDF</p> <p>(ii) 11 new projects have accessed the Export Growth Fund under revised conditions</p> <p><u>RDB</u> Mobilization of investors to develop 45 ha ongoing. 20 ha to be developed by Bella flowers. Discussions on possible/ additional incentives are ongoing</p> <p><u>Districts:</u> Mobilization of households for project expension</p> <p><u>PSF</u> To particularly encourage local investors</p> <p>Farmers were mobilized for summer flower production</p>

Output	Indicator	Baseline	Targets/milestones				Activities	Annual achievements
			Q1	Q2	Q3	Q4		
3.3 Increased coffee production through increase in productivity from 2.8 to 3kg/tree and fully washed coffee from 54 to 70%	MT of coffee produced (18,442)	Baseline: 18,168 MT (Not cumulative)	5,901	4,448	3,608	4,485	<p>NAEB</p> <p>1.Support to production of 1.3 millions seedlings for gap filling</p> <p>2.Follow up on the acquisition and application of 5,000 MT of mineral fertilizer and extension services</p> <p>3. Train 15,000 coffee farmers through farmers field school</p> <p>4.Apply 8,500 liters of pesticides for pests and diseases control</p> <p>Districts Mobilize coffee growers to maintain and increase area under coffee plantation</p>	<p>21,960 MT of coffee produced</p> <p>1.3 million seedlings under preparation</p> <p>4,808 tons of mineral fertilizers were distributed and applied.</p> <p>28,745 farmers registered from 368 FFS were trained on erosional control /lime application, safe use of pesticide, coffee suckers selection, turn composte coffee harvesting and quality and coffee planting hole- preparation were conducted in Huye, Nyaruguru, Nyamagabe, Nyamasheke, Rusizi, and Ngoma.</p> <p>12,491 litres of pesticides were applied in Season A and B.</p> <p>Coffee stakeholders meetings, taskforce meetings were conducted to prepare coffee campaign and strengthen zoning policy. 862HA planted by cws & individual farmers</p>

Output	Indicator	Baseline	Targets/milestones				Activities	Annual achievements
			Q1	Q2	Q3	Q4		
3.4 Increased made tea production through increase in productivity from 6.8 to 7 MT /ha	Volume in MT of Tea produced (25,605 MT)	Baseline: 26,891 MT	5,975	7,852	5,633	6,145	<p><u>NAEB</u></p> <p>1. Produce 5 million of tea seedlings</p> <p>2. Support tea growers to apply 6,700MT of mineral fertilizers</p> <p>3. Finalize resettlement of 128 families at Munini site located in Nyaruguru distric</p> <p>4. Finalize expropriation of 109 ha land in Rugabano for tea site development to complete (438 ha)</p> <p>5. Regural maintenance of tea planted on 1,019 ha and 500 rehabilitated</p>	30,375 MT of tea produced
							7,443 MT of mineral fertilizer were purchased and distributed for application.	
							128 resettlement houses were completely handed over to the beneficiaries	
							89ha expropriated and the remaining land titles for 20 ha were collected for the next step of verification	
							Tea plantations located in Karongi, Nyamasheke, Nyaruguru, Nyamagabe and Rutiro were maintained and rehabilitated in collaboration with tea cooperatives 281.7 MT of fertilisers applied to improve the productivity.	
							In the framework of promoting tea brand, Minispoc supported NAEB to organize cycling tour accros the country ,where the best performers were rewarded T-shirt with tea brand. Rwanda Tea has been known by tour du Rwanda followers at National and International levels which will boost the sales	
							Mobilization of farmers were conducted during the start of season A for tea planting	

Output	Indicator	Baseline	Targets/milestones				Activities	Annual achievements
			Q1	Q2	Q3	Q4		
3.5 Increased number of tea factories	Number of tea factories constructed (1)	15	Follow cyato tea factory construction (10%)		Follow cyato tea factory construction (30%)	Follow cyato tea factory construction (40%)	NAEB & MINICOM Provide technical support	The construction works started,stands at foundation stage with 20% of progress level.
	Gatara tea factory constructed (1)	Construction works at 95%	Finalization the construction works and equipments of Gatara tea factory	Gatara tea factory completed			DISTRICTS Regular monitoring of tea factory construction RCA To provide technical assistance to Farmers cooperatives PSF Support technically investors	Gatara tea factory completed and is now operational 60 coops were assisted and supply contracts signed between farmers and factories
3.6 Well organized and coordinated exporters of emerging value chains (Top five export revenue earners)	Number of exporters of new diversified products organized (5)	Baseline : Exporters in 2 value chain (Meat and Cassava) organized	Exporters of Honey organized (1)	Exporters of dairy product organized (1)	Exporters of Hides and skins organized (1)	Exporters of cereals and grains organized (2)	NAEB & RDB 1. Identify and register key stakeholders in top 5 value chains	Rwanda Apiculture Multi-Stakeholders Platform (RAMP) and grains & cereals platform were officially launched and created. Legal process of registration is ongoing
							2.Support the organization and coordination of exporters of Cereals & grains ,Animal products ,dairy products, roots & tubers and pulses	Key stakeholders meeting in hides and were organized to establish an organization platform. Honey, grains& cereals, dairy products, meat and live animals. Participated in Farm to market alliance meeting conducted between cereal buyers and cooperative producers.

Output	Indicator	Baseline	Targets/milestones				Activities	Annual achievements
			Q1	Q2	Q3	Q4		
Outcome 4: Increased private sector investment and financing								
2017/18 Targets: Agriculture investment increased and Agro processing Industries capacities improved								
4.1. Agro-processing industries promoted through increase supply of raw material and enhance their operational capacities.	Indicator: MT of raw materials supplied :	Soya processors:3,855 MT						
	(i) 10,000 MT of Soya supplied to SoyCo and 5,000 MT to AIF.	Maize: 47,050 MT		9,500	5,500	1. Mobilize land and framers to increase raw materials production of soya, Cassava, Maize and Pyrethrum. RAB	9,800 MT of soya supplied to SoyCO	
	(ii) 12,000 MT of Maize supplied to AIF, 15,000 MT to MINIMEX and 27,000 MT SMEs (ii) 1,600 MT of pyrethrum supplied to SOPYRWA	Pyrethrum: 1,605 MT	150	600	650	200	2.. Enhance the partnership with agro processors with farm cooperatives 3. Avail high yielding and resistant varieties to farmers MINICOM (i) Implement agreement between framers and industrial operators to increase supply of raw materials (ii) Update list of SMEs and quantity of raw materials delivered to SMEs and agro-processing industries RDB Mobilize investors in agro-processing industries PSF 1. Organize training and field schools for farmer's cooperatives 2. Assist in contract farming elaboration	34,900 MT of maize supplied to MINIMEX, AIF 1,589 MT of dried flowers were delivered to SOPYRWA.

Output	Indicator	Baseline	Targets/milestones				Activities	Annual achievements
			Q1	Q2	Q3	Q4		
4.2. Access to finance in agriculture sector Increased	Percentage of loans attributed to agriculture sector increased	Baseline: 6.4		6.5	7	7.5	<p>SPIU MINAGRI</p> <ol style="list-style-type: none"> 1. Link farmers to financial institutions through grantee and grant schemes 2. Promote financial literacy campaigns 3. Prepare and conduct awareness campaigns on access to finance 4. Mobilize farmers for agriculture assurance 	<p>5.7 % of loans attributed to agriculture sector , and following activities were accomplished:</p> <ul style="list-style-type: none"> (i)Farmers have been facilitated to develop bankable business plans through which they have been able to access guarantees and grants. (ii)Savings weeks campaign organized and conducted. (iii)Access to finance campaigns prepared and conducted in the 12 districts of PASP intervention. (iv)Preliminary mobilization of farmers on livestock insurance conducted in the selected 8 pilot districts (i)In collaboration with relevant institutions, Sacco refinancing scheme has been reinforced to fit for agriculture projects. (ii)Pension scheme catering for farmers interests developed (iii)Process for establishment of a risk sharing facility scheme initiated <p>Farmers have been mobilized to use warehouse receipt system; This is achieved through farmers signing contracts with EAX, which is even used as tool for access to finance from banks, MIFIs and SACCOs. In this quarter, 15 contracts have been signed.</p>
							<p>MINECOFIN</p> <ol style="list-style-type: none"> 1. Work with BRD and other banks to develop new financial products specific to agriculture. 	
							<p>MINICOM</p> <ol style="list-style-type: none"> 1. Develop warehouse receipt system 	

Output	Indicator	Baseline	Targets/milestones				Activities	Annual achievements
			Q1	Q2	Q3	Q4		
4.3 Improved linkages in supply systems of milk to processing plants.	Liters of Milk supplied to processing plants per year (68,750,000)	66,390,754 liters /yea	13,250,000	16,470,200	23,360,000	15,669,800	<p>Animal Resources Development /MINAGRI</p> <p>1. Put in place Ministerial Order to regulate feed manufacturing</p> <p>2. Start process of enforcing bush clearing and pasture improvement in all farms</p> <p>(i) 7150 farms in Nyagatare, 794 farms in Gatsibo were cleared and fenced. Bush clearing and fencing activities still ongoing</p> <p>(ii) 110 farmers in Nyagatare and Gatsibo were identified to be facilitated to construct hangars for feeds conservation</p> <p>(iii) Improved forage seeds were planted on 400 ha in Eastern Province,</p> <p>(iv) 37 forage seed multipliers were selected, trained and supported to acquire forage seeds.</p> <p>359.4 ha of land were cultivated and planted with different forage varieties</p> <p>The Animal Genetic Improvement Policy was validated, it is under implementation</p>	

Output	Indicator	Baseline	Targets/ milestones				Activities	Annual achievements
			Q1	Q2	Q3	Q4		
							<p><u>RALIS</u> Quality control of milk produced</p> <p>68 MCCs were inspected against Ministerial order regulating milk collection, transportation and selling and 185 MCC laboratory technicians and managers were trained on code of hygienic practices for milk and milk Products</p>	
						<p><u>MINICOM</u> 1.To reinforce the milk supply agreement between cattle breeders with processors 2. Strengthen the milk value chain</p> <p>DISTRICTS 1.Mobilize farmers to supply milk to the MCCS 2.Reinforcement of the implementation of milk supply regulations</p> <p>Farmers were mobilized to supply milk to the MCCs</p>	<p>Ministerial instructions on milk price was issued on 13 February 2018 by MINICOM</p> <p>18 dairy cooperatives assisted and supply contracts signed with Mukamira Milk Processing Plant</p>	
						<p><u>MININFRA/WASAC & REG</u> 1. Construct water supply system in Musheru, Matimba, Rwimiyaga (Nyagatare & Karangazi) 2.Connect electricity to Gicumbi MCC</p>	<p>(i) Contract signed with REG/EUCL to connect 7 MCCs to three phase electricity (ii) 23 sites were identified for Boreholes construction in Nyagatare, Gastibo and Kayonza; and contract signed with WASAC</p>	

Output	Indicator	Baseline	Targets/milestones				Activities	Annual achievements
			Q1	Q2	Q3	Q4		
							<p><u>RDB</u> Attract investors in MCCs management</p> <p>(i)59 Young graduates entrepreneurs under RYAF were hired to support operationalisation of Milk Collection Centre as Business Manager Associates</p> <p>(ii)17 dairy business plans on milk collection, processing and transportation have been developed and financed through RDDP and PASP. The Total investment is 1,807,586,404 Rwf</p>	
							<p><u>PSF</u> Train farmer's cooperative on quality milk production</p> <p>The PSF through Dairy Farmer Federation has mobilised farmer's cooperative to improve milk quality and specifically mastitis control and prevention.</p>	
	Number of MCCs fully operational as hub (i.e. AI services, pharmacy and feed outlet) (44 MCCs)	Baseline: 56 MCCs		13	16	15	37 Milk collection centers were operationalized as hub.	

Output	Indicator	Baseline	Targets/ milestones				Activities	Annual achievements
			Q1	Q2	Q3	Q4		
4.4. Gako Beef project implemented	Number of cows under feedlots in Gako farm (1,000)	Baseline: 600	Investors mobilization	200	500	300	<u>RAB</u> 1. To lead the process of irrigation from Cyohoha lake 2. To monitor the process of delivering water for livestock	2,977 cows introduced in Gako farm
	Number of boreholes with solar water pump systems delivering drinking water for livestock (8)	5 boreholes installed	1	2	2	3	<u>MINADEE(RF)</u> 1. Supervise and implement irrigation works as stated in ToRs <u>WASAC</u> Provide technical support in supplying drinking water for livestock (distribution of pipeline & forwarded infra-structures) <u>INVESTORS</u> 1. Increase area under fodder plantation 2. Increase number of cows under feedlots in Gako farm (1,000) <u>MoE</u> Provide water use permit and assist in supply of water for livestock	The first contract with water breeze was terminated due to failure to deliver The new contract was signed with Reserve Force on 27 April 2018, and the advance installment committed. Progress level stands at 30%: (i)Construction works started The foundation of the overhead tanks is completed and compaction of sub layer for the concrete structure also completed. -The platform for foundation of the sedimentation tank and pump house construction is ongoing . (ii)Concrete works: Lean concrete for one steel tanks foundation completed The other 2 remaining are at setting out stage (iii)Pipeline works started and pipes are being connected
	Percentage progress level of Irrigation works for Gako farm on 2,377 ha	Area to be irrigated identified (2,377 ha)	Contract signing	Follow up implementation	Follow up the implementation	Irrigation works implemented at 50% of progress level.		

Output	Indicator	Baseline	Targets/milestones				Activities	Annual achievements
			Q1	Q2	Q3	Q4		
Outcome 5: Improved Post Harvest Infrastructures								
2017/18 Targets: 120,000 MT of grains (Maize and Beans) stored decentralized level								
5.1. Post Harvest infrastructures increased	Indicator:16 new warehouses constructed	202 Warehouses		2	9	5	<p><u>DISTRICTS</u></p> <p>1. Mobilize land for warehouses construction</p> <p>2. Organize farmers in cooperatives</p> <p>3. Mobilize farmers for local storage</p> <p><u>RCA</u></p> <p>1. Capacity building of cooperative members</p> <p>2. Assist in farmer's cooperative management</p> <p><u>MINAGRI SPIU) & RAB</u></p> <p>1. Follow up warehouses construction:</p> <p>NSGR: Construction of 1 warehouse</p> <p><u>RAB (LWH/RSSP)</u></p> <p>1. Construction of 15 medium storage facility</p> <p>2. Provide technical support to the districts</p>	<p>(i) 5 Irish potatoes warehouses with 2500 MT storage capacity located in Musanze, Nyabihu and Rubavu districts constructed</p> <p>(ii) 6 warehouse completed located in Nyagatare, Gatsibo, Migina and Nyanza</p> <p>Total warehouses constructed :11</p>

Output	Indicator	Baseline	Targets/ milestones				Activities	Annual achievements
			Q1	Q2	Q3	Q4		
5.2 Postharvest facilities utilized	120,000 MT of grains (Maize and Beans) stored at decentralized level	101,456 MT stored (not cumulative)			85,000	35,000	DISTRICTS 1.Sensitize famers to store the production 2.Follow up the storage process of 120,000 MT of Maize and beans MINAGRI/ RAB & NSGR 1.Provide Technical support 2.Mobilise private companies (EAX , RGCC..) to increase the stored grains	(i)Farmers were sensitized for storage process (ii) Stored food: 67,609.7 MT (Beans: 14,221.1 MT & Maize:53,388.6 MT) have been stored at Decentralized level
5.3. Market oriented infrastructures increased	301.1 Km of feeder road rehabilitated	1,940.9 km rehabilitated	50	80	100	71.1	<u>DISTRICTS</u> 1. Identification of priority roads to be rehabilitated [Nyamasheke: 52.3km,Karongi : 75.3km, Nyagatare: 11km, Gatsibo: 11km , Nyaruguru: 10.7km,Ngoma: 15km, Bugesera: 4km,Huye:3km, Muhanga:6km, Gishwati road (Rubavu,Nyabihu & Ngororero): 109km] 2.Tendering process 3. Regular monitor roads construction <u>MININFRA (RTDA)</u> Provide technical assistance to Districts <u>MINAGRI (Feeder road) , PSF & LODA</u> 1.Follow up the implementation	262 km of feeder road were rehabilitated in Rwanda Gisagara,Karongi,Nyamashoke, Bugesera,Rubavu,Muhanga,Huye, Ngoma,Rurindo and Ngororero
	1394.2 Km of feeder road maintained	1,394.2 km maintained	150	320	530	394.2		1,178 Km maintained (Cumulative)

Output	Indicator	Baseline	Targets/milestones				Activities	Annual achievements
			Q1	Q2	Q3	Q4		
Outcome 6: Strengthened Institutional Capacity								
2017/18 Targets: 120 Agriculture graduates equipped with hands on agriculture and livestock skills and Gender mainstreaming within farmers reinforced								
6.1 Mainstreaming youth capacity development	Indicator: Number of Freshly agriculture graduates embarked to Israel for internship (120)	505	Recruitment process	120 (98 men and 22 women)		MINAGRI 1.Coordinate the recruitment process 2.Follow up training for 11 months through agro studies in ISRAEL MIFOTRA (NEP) Assist in the recruitment process	The Recruitment Process completed, 120 youth graduates (92 boys and 28 girls) are pursuing agriculture internship in Israel	

