

JUNE, 2021

Mapping of the Food Processing Industries and Importers in Rwanda

FOREWORD

Rwanda Food and Drugs Authority (Rwanda FDA) is a regulatory body established by the Law N° 003/2018 of 09/02/2018, with mission to regulate food products among others as stated in the article 8, paragraph 1;

Since the establishment of that Authority, the baseline for food industry has been challenging its better regulation and hence, the mapping of all food industries was planned and conducted. The results of the exercise presented in this report will play a big role in regulation of food industries with regard to ensure public health protection. Different institutions acting in food industry will also use this report to set up policies, which ensure safety and quality of food products produced in country.

The successful completion of this work saw the contribution of various institutions. Foremost, Rwanda FDA would like to express its gratitude to the Netherlands Development Organization-SNV Rwanda through Voice for Change Partnership Project (V4CP) for their technical and financial support that made this work possible.

Special thanks go to Esri Rwanda Ltd, official distributors of Esri software, for their technical support with the configuration of the Food processing industries dashboard informing the findings of this report.

Rwanda FDA also expresses special thanks to the Ministry of Trade and Industry (MINICOM), Ministry of Agriculture and Animal Resources (MINAGRI), Ministry of Health (MoH), Rwanda Development Board (RDB), National Industrial Research Agency (NIRDA), Rwanda Revenue Authority (RRA), Rwanda Standards Board (RSB), Rwanda Cooperative Agency (RCA) and Business Development Fund (BDF) who provided their support in various ways.

We address unreserved appreciations to the Management of Food Processing Industries who dedicated their time to make this study possible. Rwanda FDA appreciates the motivation, enthusiasm and encouragement towards the successful completion of this work.



Dr. Charles KARA Ag. Director Gene

TABLE OF CONTENT

FOREWORD	2
TABLE OF CONTENT	3
LIST OF TABLES	4
LIST OF FIGURES	5
ABBREVIATIONS	6
EXECUTIVE SUMMARY	7
BACKGROUND AND OBJECTIVES	9
1.1 Global Overview	9
1.2 African overview	9
1.3 Rwanda overview	10
METHODOLOGY	
Desk review on industries in Rwanda and Importers of food products	13
Data collection.	14
Geographical location Mapping	
FINDINGS	
1.1. Phase one: Preliminary Mapping of Industries and Food Importers	14
1.2. Phase two: Joint Follow up Inspection	15
3.2.1 Classification basing MINICOM criteria	15
3.2.2 Classification basing on score category	16
3.2.3 Distribution of industries in designated areas/ zones	17
3.2.4. Industries with qualified responsible technician	18
3.2.5. Findings per product cluster	18
3.2.7. Findings per S-Mark certification	
3.2.8 The Dashboard and its features	
The Map with industries geographical location	22
3.2.9. Reported challenges	22
3.3. Limitations of the mapping exercise	
CONCLUSION	23
RECOMMENDATIONS	
REFERENCES	26
APPENDICES	
TRATA RITE A TITE A	

KWANDA FDA Rwanda Food and Drugs Authority

LIST OF TABLES

Table 1: Classification of industries basing on MINICOM criteria	16
Table 2: Comparison between preliminary mapping inspection (phase 1) and follow up	
inspection (phase 2)	16
Table 3: Distribution of industries in designated areas/ zones	18
Table 4: Industries with qualified responsible technician	



Rwanda Food and Drugs Authority

ODG/REP/O/FDA/02/2021

LIST OF FIGURES

Figure 1: Comparison between mapping inspection (phase 1) and follow up inspection (phase	2)
	17
Figure 2: Score by product cluster – preliminary mapping	19
Figure 3: Score by product cluster – follow up inspection	19
Figure 4: Score range by company with or without S-Mark	20
Figure 5: Follow up inspection score range by company with or without S-Mark	20
Figure 6: Dashboard general overview	21
Figure 7: Scored and not scored industries	22



RWANDA FDA Rwanda Food and Drugs Authority

ABBREVIATIONS

AfCFTA:	African Continental Free Trade Agreement			
AIF:	Africa Improved Foods			
BDE:	Business Development and Employment			
EDPRS 2:	Economic Development and Poverty Reduction Strategy 2			
GDP:	Gross Domestic Product			
GFSP:	Global Food Safety Partnership			
GMP:	Good Manufacturing Practices			
HACCP:	Hazard Analysis and Critical Control Points			
HSSP IV:	Health Sector Strategic Plan 2018-2024			
Rwanda FDA:	Rwanda Food and Drugs Authority			
NST:	National Strategy for Transformation			
MINAGRI:	Ministry of Agriculture and Animal Resources			
MINICOM:	Ministry of Trade and Industry			
NIRDA:	National Industrial Research Agency			
NISR:	National Institute of Statistics of Rwanda			
PSTA:	Strategic Plan for Agriculture Transformation			
PSF:	Private Sector Federation			
RAB:	Rwanda Agriculture Board			
RCS:	Rwanda Correctional Service			
RDB:	Rwanda Development Board			
RSB:	Rwanda Standards Board			
RCA:	Rwanda Cooperative Agency			
RICA:	Rwanda Inspectorate, Competition and Consumer Protection Authority			
RRA:	Rwanda Revenue Authority			
SNV:	Netherlands Development Organization			
SDG:	Sustainable Developments Goals			
SME:	Small and Medium Enterprise			
FAO:	UN Food and Agriculture Organization			
S-Mark:	Standardization Mark			
WHO:	World Health Organization			

RWANDA FDA Rwanda Food and Drugs Authority

Mapping of the Food Processing Industries and Importers in Rwanda

EXECUTIVE SUMMARY

Food safety is the next frontier of food and nutrition security. Taking into account that hunger is on the rise, the strengthening of food processing industries could play a crucial role in producing nutritious and safe foods, consequently contributing to the Sustainable Developments Goal (SDG) 2 to end hunger, achieve food security, improved nutrition and promote sustainable agriculture.

The Government of Rwanda has demonstrated its commitment for sustainable change through the adoption of several development policies, strategic interventions to increase food production as well as the implementation of food fortification programs. Although there is remarkable progress made in food production in Rwanda, quality and safety incidences are still common.

Despite strong agricultural production, most Rwanda households still depend on markets to buy their food. Ensuring food security and nutrition still constitutes a challenge in Rwanda, one that requires the simultaneous efforts of different sectors such as agricultural production, health, infrastructure, industry and trade, IT, environment and animal health among others using the "One Health" approach.

The establishment of Rwanda FDA in 2018 aimed at addressing the safety issues as per its mandate to protect public health through regulation of processed food, among others. When the Authority took over the sector in April 2019, there was no data on how the industries are performing in terms of compliance to safety requirements.

Therefore, the overall objective of the mapping of food industries is to create a baseline of existing actors in the industry, taking a closer look at who they are, where they operate, what products they process and what challenges they face.

The mapping was done in two phases. The preliminary mapping phase was done between November 2019 and June 2020 and it consisted of data collection using a questionnaire and geographical coordinates mapping using ArcGis technology.

During this first exercise, 636 food industries underwent mapping countrywide and categorization based on a score awarded on performance against key criteria set to determine the premise suitability such as location, hygiene, equipment and storage facilities. The four categories are *dark green* with 80-100% score, *light green* with 65-79% score, *yellow* with 55-64% score and *red* with less than 55% score.

The dark green category fulfils the requirements for premise suitability and qualifies for premise license. Light green category received notice to rectify defects while still operating; yellow category receives a suspension notice to rectify defects and red category receives a closure notice for the sake of public health protection.

After giving recommendations to industries, there was a second phase of inspection in October 2020 and it was done jointly with key stakeholders including MoH, MINICOM, MINAGRI, RDB, RSB, RAB, local government and RICA. Each stakeholder was on board to have a common understanding on the situation and realize its contribution to boost the industry.

The second phase showed variations both in total number of industries and in number per each category as follows:

Mapping of the Food Processing Industries and Importers in Rwanda

- Dark green category has 164 industries compared to 160 in the first phase
- Light green category has 135 industries compared to 121 in the first phase
- Yellow category has 21 industries compared to 56 in the first phase
- Red category has 128 industries compared to 137 in the first phase
- Not scored category has 206 industries compared to 162 in the first phase
- Total number: 654 industries.

The findings of this report offer a snapshot of the current situation and inherent gaps in the food sector, laying the foundation for further interventions in the regulation and monitoring of processed food products and the general improvement of food chain systems.

As an overall conclusion, the current situation calls for both short and long term strategies to boost the industries. With 19.5% of industries in red category and 3.2% in yellow category, the Authority needs to take regulatory decision by issuing suspension for yellow category and closure for red category as an immediate solution for the sake of protecting public health. In addition, Rwanda FDA and other stakeholders will conduct an intensive awareness for the industries to understand the safety requirements by having their premises licensed and products registered.

Long-term strategy could consider the revision of industrial policy so that all food industries can operate within industrial zones (for big ones) and industry designated areas at district level where basic infrastructure is available. The policy would also define the required qualification for key personnel as well as the needed hands on training.

Finally, there should be a plan to boost exports as an incentive for those making premium products that meet international markets requirements.

RWANDA FDA Rwanda Food and Drugs Authority

BACKGROUND AND OBJECTIVES

1.1 Global Overview

In the event that recent trends continue, the number of people affected by hunger will surpass 840 million by 2030, or 9.8% of the population. These numbers are projected to alarmingly increase with the current Covid-19 pandemic¹.

Food security and nutrition are intimately related and relying heavily on the adequate supply of safe, affordable and nutritious foods to all people. The absence of access to food affects diet quality, which can lead to malnutrition or overweight and obesity².

The 2020 State of Food Security and Nutrition in the World report qualifies the need to strengthen efforts towards increasing availability and access to nutritious foods as key to achieve the 2030 Agenda targets³.

Taking into account that hunger is on the rise, the strengthening of food processing industries could play a crucial role in producing nutritious and safe foods, consequently contributing to the Sustainable Developments Goals (SDG) 2 to end hunger, achieve food security and improved nutrition and promote sustainable agriculture.

With industrialization, food has become a global business. Trade agreements between countries have been set and food safety has been increasingly catching attention of the international community especially after the 2008 Melamine scandal in China. This prompted the establishment of standards for food safety that determine maximum acceptable levels of common contaminants be biological, chemical or physical nature.

For the sake of public health protection, countries have started regulating food safety through the establishment of regulatory agencies that control both local and imported food products. These agencies have the mandate to take regulatory decisions including disposal of hazardous products.

1.2 African overview

The African food and beverage markets are projected to reach US\$ 1 trillion by 2030 opening up possibilities for African farmers and entrepreneurs to become key actors on the global market, reduce unemployment and improve food and nutrition security⁴.

With the African Continental Free Trade Agreement (AfCFTA) creating a single continental market with free movement of goods, services, capital and business workforce, it is expected that Africa's GDP will increase substantially and boost intra-African exports exponentially.

¹ The state of food security and nutrition in the world 2020,

http://www.fao.org/3/ca9692en/online/ca9692en.html#chapter-1_1 ² op.cit, 1

³ <u>http://www.fao.org/3/ca9692en/online/ca9692en.html#chapter-executive_summary</u>

⁴ African Development Bank, *the economics of food cuisine, investing in the african food and agricultural industries*, <u>https://www.afdb.org/fileadmin/uploads/afdb/Documents/Generic-Documents/FoodCuisine_Africa.pdf</u>

However, food safety has been the main setback across most African countries. According to WHO 2015 data, foodborne hazards are responsible for 137,000 deaths and 91 million acute illnesses in Africa every year — mostly affecting children under the age of five. The risks include dangerous strains of bacteria like salmonella and *E. coli*, as well as tapeworm and other parasites, and naturally occurring toxins like cyanide. The GFSP report alerts that Africa's food safety challenge will only intensify as its food system matures, supply chains lengthen, and Africans have access to more of the nutritious meat, dairy products, fruits and vegetables that are needed for good health but are more vulnerable to food safety hazards than traditional staples of African diets.

1.3 Rwanda overview

Since the 1994 Genocide perpetrated against the Tutsi, Rwanda has recorded significant achievements in multiple areas, including food production in line with Development Goals. Rwanda's GDP reached \$5.5 billion in 2010, translating into a GDP per capita level of \$5404⁵. Rwanda's productive structure is still dominated by agriculture and low-value services. Food crops form the largest single sub-sector of the Rwandan economy at 31 per cent of GDP

Driven by a visionary leadership in a result-oriented culture, the Government of Rwanda has demonstrated its commitment for sustainable change through the adoption of strategic interventions to increase food production, food fortification programs, as well as several development policies:

• From Vision 2020 to Vision 2050

Under Vision 2050, Rwanda aspires to attain upper middle-income country status by 2035 and high-income status by 2050, with the aim of providing high quality livelihoods and living standards to Rwandan citizens.

• From EDPRS 2 to the National Strategy for Transformation (NST1) 2018-2024

The National Strategy for Transformation 2018-2024 is built on three pillars: Economic Transformation, Social Transformation, and Transformational Governance⁶. It follows the Economic Development and Poverty Reduction Strategy 2 (EDPRS 2) and includes the implementation of the last two years of Vision 2020 and the first four years of Vision 2050. The NST1 projects an economical growth driven primarily by the services and industry sectors. The National Industrial Policy has three objectives namely increase domestic production for local consumption, improve Rwanda's export competitiveness and create an enabling environment for Rwanda's industrialization. Through these objectives, Government of Rwanda has promoted food production environment

⁵ Natioanl Industrial Policy 2011, Pg 7.

⁶ http://www.minecofin.gov.rw/fileadmin/user_upload/NST1_7YGP_Final.pdf

• Strategic Plan for Agriculture Transformation 2018-2024 - PSTA4

The PSTA4 is the Sector Strategic Plan for Agriculture under Rwanda's National Strategy for Transformation (NST) that guides public investments in agriculture and sets out the estimated required resources for the agricultural sector during the period of 2018-2024 in addition to contributing to the three NST pillars in line with the aspirations of Vision 2050.

• The Rwanda Health Sector Strategic Plan 2018-2024 (HSSP IV)

The Rwanda Health Sector Strategic Plan 2018-2024 (HSSP IV) is the guiding document outlining national strategic directions to improve health standards of Rwandans. In this regard, Rwanda has adopted green technology to increase the quantity and quality of foods and promote improved nutrition through food fortification programs to accelerate the elimination of stunting⁷.

• The National Food and Nutrition Policy and the National Food and Nutrition Strategic Plan of 2013-2018

The National Food and Nutrition Policy developed in 2013 builds on several achievements that have improved the status of nutrition and household food security in Rwanda. The vision of the National Food and Nutrition Policy is to ensure services and practices that bring optimal household security and nutrition for all Rwandans⁸.

• The Rwanda Food and Drugs Authority (FDA)

At the national level, regulating food products from the processing stages to their consumption is vital to ensure the safety and health of Rwandan consumers. It is in this regard, that Rwanda Food and Drugs Authority was established by law N° 003/2018 of 09/02/2018 to regulate medical products, processed foods, household products, tobacco and tobacco products to ensure their quality and safety so as to protect the population of Rwanda from defective, falsified and substandard products.

To protect public health, Rwanda FDA regulates food products through the registration and inspection of food processing industries, manufacturers, importers, distributors, testing, and post market surveillance. Regulating such a complex sector requires data and good strategies.

Kationale Ida Food and Drugs Authority

Food processing has become a global business with all the associated hazards.

⁷ Forth Health Sector Strategic Plan, 2017-2024⁸Op. cit, 6

The World Health Organization (WHO) reports that each year unsafe food causes 600 million cases of foodborne diseases (30% of which occur among children) and 420,000 deaths worldwide. Developing countries account for the biggest share because the food systems are not regulated⁹.

Despite strong agricultural production, most Rwandan households still depend on markets to buy their food¹⁰. Ensuring food security and nutrition still constitutes a challenge in Rwanda, one that requires the simultaneous efforts of different sectors, such as the agricultural production, health, economic growth and innovation, infrastructure, industry and trade, water, sanitation and hygiene, climate and environment, among others¹¹.

In addressing food security and nutrition challenges at the national, regional or global levels, food processing holds a central position. The industry has the potential to provide consumers with accessible and affordable, high quality, nutritious and safe foods. Food processing also plays a key role in the production of fortified foods providing populations with the essential micronutrients¹².

Food fortification is considered a sustainable public health strategy since it has the potential to reach wider at-risk populations without requiring major changes in existing consumption patterns¹³. Beyond the production of food, industrialization is a means to boost local economies and provides consumers at the end of the value chain with locally produced foods.

Although there is remarkable progress made in food production in Rwanda, some quality and safety issues are still being observed. Main hazards include food adulteration agents and natural contaminants such as aflatoxin, fumonisin, dioxins, microbes as well as added chemicals like melamine in infant formula and Sodium metabisulfate used in meat preservation.

The Rwanda FDA latest report on quality and safety issues recorded cases of counterfeit products, poor packaging or storage conditions, forcing various food products to be recalled from the markets. In the worst cases leading to the suspension of the manufacturing plant, the report records cases of blindness and deaths due to methanol contained in liquor.

The 'Microbiological Quality and Safety Assessment of the Rwandan Milk and Dairy Chain' report revealed that 5.2 per cent of tested raw milk were contaminated with Salmonella; boiled and fermented milk were contaminated with *E. coli* (2.4 CFU/ml), while pasteurized milk were contaminated with E. coli (2.7 CFU/ml)14. In addition, substantial evidence on bacteriological assessment of meat products sold in Kigali City confirmed the presence of Salmonella (19.6 per

https://www.who.int/activities/estimating-the-burden-of-foodborne-

¹⁰ UN Development assistance plan (2018-2023) <u>https://rwanda.un.org/sites/default/files/2019-04/United%20Nations%20in%20Rwanda%20Development%20Assistance%20Plan%202018-2023%20%28UNDAP%20II%29_0_0.pdf</u>

⁹ World Health Organization, Estimating the burden of foodborne diseases,

 $diseases \#: \sim: text = Each\% 20 year\% 20 worldwide\% 2C\% 20 unsafe\% 20 food, number\% 20 is\% 20 likely\% 20 an\% 20 underest imation.$

¹¹ op. Cit., 6

¹²Food processing in Sub-Saharan African, <u>https://www.technoserve.org/wp-content/uploads/2018/04/solutions-for-african-food-enterprises-final-report.pdf</u>

¹³ The role of food fortification in the control fo micronutrient malnutrition, https://www.who.int/nutrition/publications/micronutrients/GFF_Part_1_en.pdf?ua=1

¹⁴ Kamana et al.; Microbiological quality and safety assessment of the Rwandan milk and dairy chain, 2014

¹⁴ Rwanda Standard Board: Quality and safety report, 2017

cent) and E. coli (3.5 CFU/ml) in meat products respectively with levels above the safety limits¹⁵. Furthermore, reliable findings raised an alert to persistent presence of Aflatoxin B1 in maize $(24.7\pm 23.74 \ \mu\text{g/kg} \text{ and } 25.7\pm 25.85 \ \mu\text{g/kg})^{16}$, maize flours (16.8 $\mu\text{g/kg}$), peanuts (126.6 $\mu\text{g/kg}$) and soybean (11.2 $\mu\text{g/kg}$) sold at the retail markets¹⁷.

These findings illustrate the imperative necessity for efficient regulation and monitoring frameworks applicable to all food industries and importers.

In light of these worrying facts, the overall objective of the mapping of food processing operators and importers commissioned by Rwanda FDA is to create a baseline of existing actors in the industry, taking a closer look at who they are, where they operate, what products they process, how much they produce and what challenges they face. Using the criteria developed by the Ministry of Trade and Industry (MINICOM) to classify micro, small, medium and large enterprises, the study identified 654 food operators around the country and developed a database of food importers.

The findings of this report offer a snapshot of the current situation and inherent gaps in the food sector, laying the foundation for further interventions in the regulation and monitoring of processed food products and the general improvement of food chain systems.

METHODOLOGY

This study aimed at mapping operating food processing industries and distribution systems, as well as establishing a database of food importers in Rwanda.

It was done through desk review of the existing data on industries and importers, data collection using a checklist questionnaire with score as well as geographical location mapping using ArcGis technology.

Desk review on industries in Rwanda and Importers of food products

The initial search looked at secondary materials provided by the Ministry of Trade and Industry (MINICOM), The National Institute of Statistics in Rwanda (NISR), the import and export of goods unit at Rwanda Revenue Authority (RRA), RSB, RCA and districts business development and employment units. Gathering and reviewing existing lists of food processors was key in understanding previous efforts made to identify actors in the industry.

¹⁵Niyonzima et al.; Meat retail conditions within the establishments of Kigali city (Rwanda): Bacteriological quality and risk factors for Salmonella occurrence in meat, 2017.

¹⁶ Nishimwe et al; An initial characterization of aflatoxin B1 contamination of maize sold in Kigali, 2017

¹⁷ Nishimwe et al Nishimwe et al; An initial characterization of aflatoxin B1 contamination of maize sold in Kigali, 2017, Umereweneza et al, Mycotoxins Assessment in maize flour, 2017 and Niyibituronsa et al; 'Evaluation of mycotoxin content in soybean (Glycine max l.) grown in Rwanda',2018

Data collection

Using the checklist questionnaire for inspection developed by Rwanda FDA (appendix A). The tool was developed using Codex Alimentarius¹⁸ requirements for food hygiene. The main areas inspected include the location, building facilities, raw materials, equipment, sanitation, personnel, hygiene, storage and records keeping. Every item was awarded marks with a total score out of 100. There was a categorization basing on cumulative score whereby Dark green category has the score between 80 and 100%), Light green category has a score between 65 and 79%, Yellow category has a score between 55 and 64% and Red category has a score below 55%.

Industries in Dark green category do fulfil the requirements and are eligible for premise license. Industries in Light green category are allowed to operate but need some improvement to reach the desired level. Industries in Yellow category lack important components and are deemed to be suspended and improve; while the Red category industries are deemed unfit for any kind of processing activity, therefore meant to be closed.

Geographical location Mapping

Geographical coordinates for facilities were collected using ArcGIS software installed on tablets and the data was used to create a dashboard that, in addition to showing geographical location with high accuracy, also has interactive features including statistics and other geographic content.

FINDINGS

The mapping exercise was done in two phases namely the preliminary mapping phase and the follow- up inspection.

1.1. Phase one: Preliminary Mapping of Industries and Food Importers

This was done from November 2019 to June 2020. Using a questionnaire and awarding marks to each component, a total score was awarded and was used to categorize the industry in one of the following categories:

- Dark green category (score between 80 and 100%) had 160 industries and these were deemed fit to process food;
- Light green category (score between 65 and 79%) had 121 industries and these needed some improvement to reach the desired level;
- Yellow category (score between 55 and 64%) had 56 industries and these needed to be temporarily suspended to improve;
- Red category (score below 55%) had 137 industries and these were deemed unfit for any kind of processing activity, therefore meant to be closed

¹⁸ The Codex Alimentarius international food standards, guidelines and codes of practice contribute to the safety, quality and fairness of this international food trade (developed by the Food and agriculture organizations of the United Nations and the World Health Organization). Consumers can trust the safety and quality of the food products they buy and importers can trust that the food they ordered will be in accordance with their specifications.

- 162 industries were not scored due to the fact that they were not operating at the time of visit.
- Total number: 636 industries.

In the same exercise, each industry's coordinated were mapped; geographical location and score for each industry were used to feed the dashboard.

• Database of food importers

The database of food importers was developed using the data received from Rwanda Revenue Authority (RRA) customs service department. The study observed that Rwanda still relies heavily on imported foods. The majority of imported items include, but is not limited to sugars, salts, beverages, milk and milk products, cereals and cereal products, tubers, rice, processed fruits and vegetables, coffee and tea, oils and fats. The majority of these items were imported from 113 countries, mainly Uganda, Kenya, Tanzania, Burundi, Democratic Republic Congo, United Arab Emirates, China, India, South Africa and Europe in 2018-2019. Findings show that 1,799 companies imported 554 food brands. The database set of importers, products and country of origin and volumes is appended to this report.

This preliminary data on importers of food gave an idea in terms of numbers. There will be another exercise of visiting their warehouses/ supermarkets and have their geographical location mapped.

1.2. Phase two: Joint Follow up Inspection

The joint exercise was done in October 2020. After completing the preliminary mapping exercise, Rwanda FDA shared recommendations for improvement with respective industries and with key stakeholders including MoH, MINICOM, MINAGRI, RDB, RSB, RAB, local government and RICA.

It was decided to conduct a joint follow- up inspection to evaluate any improvements made on the side of industries as well as to have a common understanding on the situation and realize what each stakeholder needs to contribute to boost the industry.

3.2.1 Classification basing MINICOM criteria

Following the preliminary mapping, it was recommended to categorize the mapped industries using classification criteria developed by the Ministry of Trade and Industry (MINICOM) into micro, small, medium and large enterprises according to the number of staff they employ as summarized in the table below.

Classification by human resource capacity	Number of Industries
Not classified	18
Micro producers - with less than 3 staff	75
Small producers - with less than 30 personnel	416
Medium producers - with staff size below 100	100
Large producers - with staff size of 100 and more	45
Total	654

Table 1:	Classification	of industries	basing on	MINICOM criteria
	- · · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·		

As per the table above, 416 industries (63.6%) of mapped industries are small producers with less than 30 employed staff. This is an indication of low financial capacity that has a bearing on the level of compliance to safety requirements.

3.2.2 Classification basing on score category

The follow up phase showed variations both in total number of industries and in number per each category as follows:

- Dark green category has 164 industries compared to 160 in the first phase
- Light green category has 135 industries compared to 121 in the first phase
- Yellow category has 21 industries compared to 56 in the first phase
- Red category has 128 industries compared to 137 in the first phase
- Not scored category has 206 industries compared to 162 in the first phase
- Total number: 654 industries.

The comparison between the two phases is summarized in the table and figure below:

Table 2: Comparison	between preliminat	ry <mark>m</mark> apping inspection	n (phase 1) and follow up
inspection (phase 2)			

Score out of 100	Phase 1	Phase 2
80-100 (Dark green)	160	164
65-79 (Light green)	121	135
55-64 (Yellow)	56	21
0-54 (Red)	137	128
Not scored	162	206
Total	636	654
БИЦАМИ	TUUU allu	Drugs Authorit

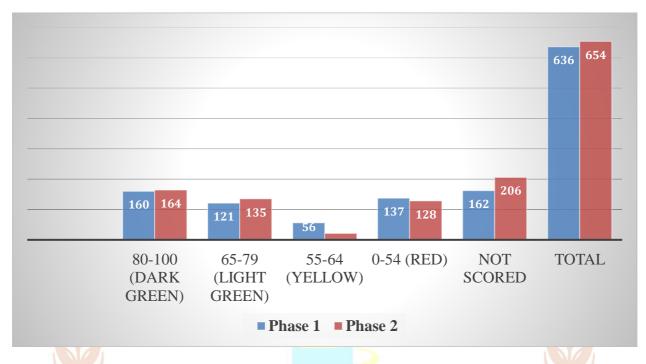


Figure 1: Comparison between mapping inspection (phase 1) and follow up inspection (phase 2)

Both the table and figure show how numbers of industries in each category changed between the two phases. Two positive changes can be observed: Dark green category saw an increase by 4, light green saw an increase by 14 of which 9 upgraded from yellow category. This was due to the previously shared recommendations and the willingness of industries to comply. On the other hand, yellow and red categories still have significant numbers. Though a decrease by 35 and a decrease by 9 in red category are observed, the current figures (3.2% in yellow category and 19.5% in red category) need Rwanda FDA attention in terms of continued awareness as well as regulatory decisions especially in red category.

Finally, the number of industries not scored has considerably increased against expectations and this is mostly due to Covid-19 situation that led to suspension of operations following lack of market or raw materials in most industries.

Note: It is important to note that the score is solely based on the facility inspection not the process. The next step will be Good Manufacturing Practices (GMP) inspection (the process) and products registration as regulatory requirements. It can be predicted that the current numbers are likely to change after GMP inspection.

3.2.3 Distribution of industries in designated areas/ zones

As illustrated in the table below, only a very small portion of food industries (5%) is located in industry- designated area.

Category	Number of industries(Follow up inspection)	Located in Industrial area
Dark Green	164	27
Light Green	135	4
Yellow	21	1
Red	128	3
Not scored	206	
Total	654	35

Table 3: Distribution of industries in designated areas/ zones

3.2.4. Industries with qualified responsible technician

The table below shows the status in regards to the presence of qualified technician

Category	Number of industries(Follow up inspection)	Presence of qualified responsible technician
Dark Green	164	142
Light Green	135	96
Yellow	21	14
Red	128	23
Not scored	206	
Total	654	275

Table 4: Industries with qualified responsible technician

Out of the 654 mapped industries, only 275 (42%) have a qualified technician with at least a bachelor's degree in Food Science or related fields. This implies that safety and quality consistency for products from more than half of the mapped industries remains doubtful due to the absence personnel with required qualifications. The industrial policy should set minimum capacity for any food producing industry including the qualification of technical personnel.

3.2.5. Findings per product cluster

The processed food industries were classified into 13 food clusters, namely: alcoholic beverages, bakery, cereals, dairy products, food supplements, honey & sugar, meat & fish products, processed vegetables, tubers & nuts, soft drinks, spices, sauces & proteins, tea & coffee, tobacco and water.

Alcoholic beverages, bakery and cereals are the most largely processed foods countrywide, while food supplements and Tobacco are found at the bottom of the processing scale.

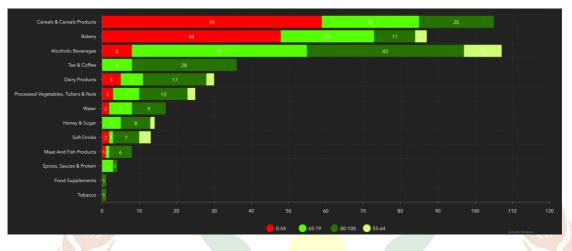


Figure 2: Score by product cluster – preliminary mapping

The main food processing categories, namely, bakery products, cereals and alcoholic beverages also register the highest numbers of failed inspection scores. Looking at the scores, half of the industries processing bakery products and cereals products in the country are meant to be closed, in line with the existing inspection criteria.



The table above shows the additional numbers in each product cluster compared to the findings in preliminary mapping exercise.

3.2.7. Findings per S-Mark certification

RSB has the product certification scheme that consists of conducting audits, sampling and testing products against their standard for compliance. Before the establishment of Rwanda FDA, RSB used to regulate the food sector by conducting inspections and offering certification services on a voluntary basis.

Certified Products are given a Standardisation Mark (S-Mark), to be displayed on the product¹⁹. Once received, the certification is valid for a period of 2 years.

¹⁹ Rwanda Standards Board, <u>https://www.rsb.gov.rw/index.php?id=109</u>



Figure 4: Score range by company with or without S-Mark

Out of 474 inspected facilities during phase one, 95 industries hold an S-Mark certification and it would be expected that all of them fall in dark green category. However, only 49 of them (51.6%) fall in dark green category. 9 of them (9.5%) fall in red category while 11 of them (11.6%) fall in yellow category, meaning 22.1% of all industries are not fit to make safe products while holding S-Mark. It is also important to note that 26 industries (27.3%) of those with S-Mark are in light green, meaning they have some queries to address in terms of premise suitability.



Figure 5: Follow up inspection score range by company with or without S-Mark

During the follow up inspection, the total number of industries with S-Mark reduced from 95 to 90. Industries in dark green remained 49 (54.4%). Industries in light green increased from 26 to 30 (33.3%), industries in yellow category reduced from 11 to 7 (7.7%), while industries in red category reduced from 9 to 4 (4.4%).

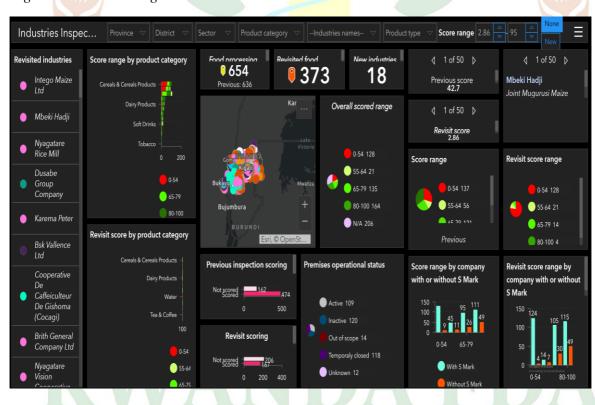
This shows that S-Mark may not necessarily be an indication of safety, rather a trade tool. There has to be a more efficient regulatory tool to ensure continuous compliance to safety requirements.

3.2.8 The Dashboard and its features

As mentioned before, geographical coordinates and score were used to feed the dashboard that has interactive features to illustrate findings, providing continuous access to the findings and enabling specific searches per food category, district and score.

General Overview

The general overview displays key indicators such company names, the geographical location of the mapped industries, their general scoring, the product cluster and scoring per product cluster, as well as the S-mark certification indicator. It also offers a comparison between the two phases of inspections.



The dashboard allows users to generate statistics on a given variable such as total industries, those with S Mark, those making a specific product, those located in a specific province/ district/ sector and those with a given score range.

Figure 6: Dashboard general overview

The Map with industries geographical location

The below screenshot displays a map of Rwanda. Each dot represents a food industry with a colour depicting a given product cluster as per the legend. By zooming in, users can see the geographical coordinates as well as infrastructure such as roads, electricity and water supply around each industry.

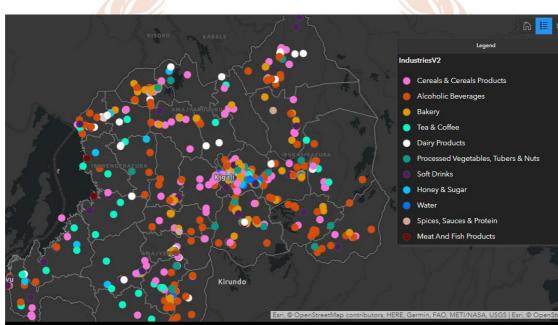


Figure 7: Scored and not scored industries

The map shows that industries are scattered all over the country, implying the lack of clear policy on where they should be located.

3.2.9. Reported challenges

a. Unsuitable location

As reported by the findings per geographical location, 95% of inspected industries have their infrastructure located in areas that are far too often not suitable for food processing activities and do not conform with safety regulations.

b. Raw materials, equipment and packaging

Most industries reported acquiring their raw materials, manufacturing their equipment and packaging materials from local markets and their supply is seasonal. Food grade equipment is mandatory but some small industries lack appropriate machines. Packaging materials, on the other hand, is a common challenge to all industries especially those using glass bottles due to high cost. It has led to frequent use of plastic bottles even for alcoholic beverages where plastic is strictly prohibited.

c. Power issues and potable water supply

Unreliable power supply is another key challenge for food industries to function optimally. Industries raised electricity supply challenges in terms of consistency and intensity. Power supply issues do not constitute a challenge in industrial park where a special scheme has been established to encourage more production.

d. Limited technology

Food processors reported the use of old technologies in food production causing lines underutilization. Further, modern equipment that could increase efficiency are expensive for the small-scale industries and so is their maintenance.

e. Lack of skilled personnel

A small number of well-trained food scientists remains an issue for large-scale industries where processes and automated lines need constant monitoring to ensure safety and high quality of final products. On the other hand, SMEs still struggle to afford qualified technicians and they opt to run their lines the traditional way without having a real process.

3.3. Limitations of the mapping exercise

The following are the study's limitations:

- 206 industries out of 654 were not scored because they were not operating at the time of the inspection due to lack of raw materials, lack of packaging materials, lack of capital, and some companies were still under construction.
- The scope of the study was limited to the mapping of food processing industries in the country and the development of a database of food importers in Rwanda. Focusing primarily on the cataloguing of existing food industries and importers, the study produced mainly quantitative data.
- The teams on field had to inform industries the purpose of the study ahead of time. Respondents might have given the answers they believed were expected from them and might have made sure that their facilities were up to the FDA standards, which would not reflect accurately their usual working conditions.

CONCLUSION

This study has revealed that food industries status is quite alarming. With 128 (19.5%) industries in red category and 21 (3.2%) in yellow category, there is a need for a quick regulatory decision for the sake of protecting public health. In collaboration with other stakeholders, Rwanda FDA shall put in place a strategy to address common issues that have direct impact on safety and quality

ODG/REP/O/FDA/02/2021

of the products including training of industries on developing systems that ensure control of processes and compliance to standard requirements.

RECOMMENDATIONS

1. Enforce regulatory decisions

The industries in red and yellow categories need to be suspended and given time to comply with safety requirements. The exercise will be done by products cluster to avoid crisis on the market. Rwanda FDA shall draw a roadmap for gradual phasing out of the lower scored industries.

2. Finalize the National Industrial Policy

As the National Industrial Policy is being amended, there is a need to give special attention to food industries by addressing the major issues raised during the mapping exercise. These include:

- Setting minimum capacity in terms of skills, equipment, quality control to be allowed to start production;
- Set suitable location for food industries either in industrial zones, locate them by according to their type of production in order to avoid cross contamination among industries settings or other designated areas for SMEs. There should also be a timeline for migration for industries currently operating outside the designated areas
- Specify the authorization process for manufacturers by the competent authority (Rwanda FDA) not local authorities or any other organs.
- Specify how inspections are conducted and who takes the lead to avoid overlaps in the implementation of roles;
- Incentives and preferential treatment for complying products by rolling out a scheme to encourage premium products by securing exports markets as part of promoting made in Rwanda. In addition, Rwanda FDA and MINICOM have started engaging larger markets representatives (schools, army shop, RCS) to only award supply tenders to the manufacturers that have registered their products with Rwanda FDA as a preferential treatment.

3. Subsidize the sector

Many food-processing companies had to close for lack of capital. The current Covid-19 pandemic will most definitely worsen the already difficult financial situation of numerous enterprises. Subsidizing the food sector to revive it now more than ever should be a priority. The subsidy would help a great deal in getting the suitable raw materials, equipment and packaging material that play a vital role in the safety of final product.

4. Closer collaboration between institutions using "One Health" approach

"One Health" approach means that institutions learn not to work in silos but share the information, plan and work together to solve problems of common interest.

Food safety is crosscutting and a shared responsibility. Rwanda FDA, Ministries, RDB, Academia, PSF and local authorities will have to set a platform that allows continuous collaboration in policies development, annual planning and performance evaluation.

In such a situation where majority of industries are SMEs and lack proper food safety systems, inconsistencies in production process are inevitable. Therefore, Rwanda FDA needs to intensively train the industries technical personnel and frequently conduct inspections for compliance. A strong collaboration with PSF and local authorities as government permanent organ at grassroots level is vital so that the defaulting industries can be immediately reported to the regulator for proper regulatory action.

5. Boost exports

The industries need to step out and start producing premium products for export. With the relatively low purchase power locally, it is more rewarding to invest in food systems that ensure the safety and quality of the products, attractive packaging and labelling to meet global markets standards and expectations. The boost requires financial investment and PSF, RDB and MINICOM should roll out a scheme for its support.

6. Training on Food safety, HACCP and branding

As mentioned in the previous section, food industries reported the lack of skilled personnel as an important challenge they face. Training staff on hygiene measures, quality control, recalls from the markets, among other skills would ensure increased safety at all levels of production. Rwanda FDA needs to adopt the current worldwide trends that include selfregulatory systems such as HACCP that ensure continuous compliance.

It was also observed that some products might meet the safety requirements yet have poor branding that makes them less attractive and less competitive. Thus, industries could adopt international branding models to match safety and products attractiveness.

7. **Research and Innovation:** Further investment is recommended in research, data analysis and development for sustainable solutions that not only look to protect consumers but also lead to the development and marketing of new products.

The industries should collaborate with academia and other research institutions to conduct research that guide the production processes and bring on board new products that can respond to the current market demand.

Rwanda Food and Drugs Authority

REFERENCES

- African Development Bank, 'The economics of food cuisine, investing in the african food and agricultural industries', <u>https://www.afdb.org/fileadmin/uploads/afdb/Documents/Generic-Documents/FoodCuisine_Africa.pdf</u>
- 2. 'FDA Dashboard', <u>https://esri-</u> <u>rw.maps.arcgis.com/apps/opsdashboard/index.html#/1215296587794e8caf8706722f5d09</u> <u>93</u>
- 3. Food and Agriculture Organization, 'The State of food security and nutrition in the world 2020', <u>http://www.fao.org/3/ca9692en/online/ca9692en.html#chapter-1_1</u>
- 4. Food processing in Sub-Saharan African, <u>https://www.technoserve.org/wp-content/uploads/2018/04/solutions-for-african-food-enterprises-final-report.pdf</u>
- 5. Food and Agriculture Organization, 'Problems and deterrents to growth of small scale food processing', <u>http://www.fao.org/3/y5113e/y5113e07.htm</u>
- 6. Kamana et al.; Microbiological quality and safety assessment of the Rwandan milk and dairy chain, 2014
- 7. Ministry of Agriculture and Animal Resources 2017, 'National Agriculture Policy', viewed 14 February 2020, <u>http://extwprlegs1.fao.org/docs/pdf/rwa174291.pdf</u>.
- 8. Ministry of Agriculture and Animal Resources 2018, 'Strategic Plan for Agriculture Transformation 4 (PSTA 4) 2018-2024', viewed 28 January 2020, http://www.fonerwa.org/sites/default/files/Rwanda_Strategic_Plan_for_Agriculture_Tran sformation_2018.pdf.
- 9. Ministry of Finance and Economic Planning 2017, '7 Years Government Programme: National Strategy for Transformation (NST1) 2017 – 2024', viewed 18 December 2019, <u>http://www.minecofin.gov.rw/fileadmin/user_upload/NST1_7YGP_Final.pdf</u>.
- 10. Ministry of Health 2018, 'Fourth Health Sector Strategic Plan 2018-2024', viewed 17 January 2020, <u>http://moh.gov.rw/fileadmin/templates/Docs/FINALH 2-1.pdf</u>.
- 11. Ministry of Agriculture and Animal Resources, 'Strategic Plan for Agriculture Transformation (NST1) 2018-2024', http://www.fonerwa.org/sites/default/files/Rwanda_Strategic_Plan_for_Agriculture_Tran sformation_2018.pdf
- 12. Ministry of Local Government, Ministry of Health, Ministry of Health, Ministry Agriculture and Animal Resources, 'The National Food and Nutrition Policy and the National Food and Nutrition Strategic Plan of 2013-2018' http://extwprlegs1.fao.org/docs/pdf/rwa151338.pdf
- 13. Ministry of Trade and Industry, 'Made in Rwanda Policy' https://rwandatrade.rw/media/2017%20MINICOM%20Made%20in%20Rwanda%20Policy%20(1).pdf
- 14. Niyonzima et al.; Meat retail conditions within the establishments of Kigali city (Rwanda): Bacteriological quality and risk factors for Salmonella occurrence in meat, 2017
- 15. Nishimwe et al; An initial characterization of aflatoxin B1 contamination of maize sold in Kigali, 2017
- 16. Nishimwe et al Nishimwe et al; An initial characterization of aflatoxin B1 contamination of maize sold in Kigali, 2017, Umereweneza et al, Mycotoxins Assessment in maize flour, 2017 and Niyibituronsa et al; 'Evaluation of mycotoxin content in soybean (Glycine max 1.) grown in Rwanda',2018 'Rwanda Food and Drugs Authority', https://rwandafda.gov.rw/web/

- 17. World Health Organiation, 'The role of food fortification in the control for micronutrient malnutrition', https://www.who.int/nutrition/publications/micronutrients/GFF_Part_1_en.pdf?ua=1
- 18. Rwanda Standards Board, https://www.rsb.gov.rw/index.php?id=109



RWANDA FDA Rwanda Food and Drugs Authority

ODG/REP/O/FDA/02/2021

Mapping of the Food Processing Industries and Importers in Rwanda

APPENDICES

Appendix A: Inspection checklist for manufacturing facility



SN	ITEM /ASPECT/REQUIREMENT		POINTS
		ALLOCATE D	SCORED
1.0	SITE LOCATION	/6	
1.1	Within an industrial area.	1	
1.2	Free from source of contamination	1	
1.3	Free from waterlogged environment	1	
1.4	Proper sewage and drainage systems	1	
1.5	Does not cause nuisance to nearby property or	1	
1.6	Accessible by road and/or railway all weather	1	
2.0	BUILDING (S)	/12	
2.1	Is of permanent material and in good state of repair	1	
2.2	The building is of suitable size to accommodate activities carried in	1	
2.3	Proper and adequate lighting and ventilation	1	
2.4	Internal walls are impervious, strong, not gapped, not cracked, plastered and cleanable	1	
2.5	The ceiling has no leakages, dampness and not broken or gapped	1	
2.6	Floor finish is smooth, nonabsorbent and no accumulation of grime oils or dirty and hard to withstand repeated cleaning and sanitation	1	
2.7	Good floor drainage, no stagnant water and smooth to invert	1	
2.8	All doors and windows are strong, well closing and not broken	1	
2.9	Roof in good state of repair: clean, not broken or gapped or worn out		
2.10	A building designed to prevent pests and dust from entering into the premises	1	
2.11	Premise reserved exclusively for intended products manufacturing, no other business is done in the same premise and not communicating to other business	2	
3.0	WATER SUPPLY	/6	
3.1	Potable water supply adequate in volume and pressure	1	
3.2	*Water treatment at factory, where applicable provided, maintained, and kept clean	³ utho	itv
3.3	Reservoirs with capacity to supply adequate water in case of shortage	1	
3.4	Non potable water has separate system, well identified and not connected with, or allows reflux into the potable water system	1	
4.0	FOOD RAW MATERIALS	/9	

4.1	Raw materials, packaging material and processing aids procured from known sources (contract,	2
	invoices, records, or any other traceable documents with suppliers)	
4.2	Raw food kept clean and not decomposed	1
4.3	Raw food or ingredients stored in specific stores and at recommended temperatures	2
4.4	Food products stored on racks, trestles or in	1
4.5	Racks or trestles placed at least 15cm above floor and 60cm away from walls	
4.6	*Raw materials or ingredients used shall not be expired	2
5.0	FOOD EQUIPMENT & PROCESSING	/50
5.1	*Presence of appropriate skilled supervisor	3
5.2	Food contact surface shall be clean, free from crevices/loose scale and shall not contaminate the food.	3
5.3	Non-food contact surfaces should be well designed, cleaned and maintained	2
5.4	Equipment hygienically designed, made of food grade suitable material and maintained.	1
5.5	presence of food grade, well-functioning, maintained, continuously connected and automated processing system	10
5.6	Food preparations flow pattern activities go in one direction, follow procedures and comply with standards	3
5.7	Hazards listed and measures of their prevention documented	2
5.8	Critical Control Point (CCP) are listed at each step and their management	2
5.9	Cold rooms installed with thermometers/thermograph	1
5.10	Sealing done not by hands but machine	3
5.11	Premise reserved exclusively for intended products processing, no other business is done in the same building and not communicating to other business	2 DA
5.12	Food contact Surfaces have no contact with insecticides, or other chemical or foreign matter	Authority
5.13	No direct access between processing room and toilets or other rooms	1
5.14	Adequate lighting provided where processed food is examined	1
5.15	*Fortificants/premix and other additives registered and not expired, properly	3

	processed and packaged	
	r · · · · · · · · · · · · · · · · · · ·	
5.16	Presence of tested products laboratory results (critical parameters such as; moisture content, aflatoxins, acid insoluble ash, TVC & E.coli, arsenic)	2
	Availability of Quality Control Laboratory or Contract with External Testing Laboratory with Testing plan	2
5.18	Presence of Product Standard being manufactured	2
5.19	Packed food provided with labels, showing name of manufacturer, location, date of manufacture, date of expiry, Storage directions, names and respective composition of used ingredients and batch numbers	3
5.20	Packaging material/container is of food grade, and Seals are tamperproof	2
6.0	SANITATION	/15
6.1	Lid type containers for refuse collection provided in sufficient quantity	1
6.2	Proper refuse disposal system in place	1
6.3	Presence of footbaths filled with bleach or detergent	1
	Cleaning and disinfection schedules in place and adhere to	
6.5	Measures to control pest and other vermin from food premises in place	2
	*Adequate toilets and cloak rooms provided for each sex, kept clean and free from objectionable smell	3
	Adequate hand washing basins with liquid soap and Sanitizers provided at convenient places and kept clean.	2
6.8	Toilets and cloak rooms located away from the manufacturing area, not leading to the manufacturing area	
6.9	Premises and equipment are regularly cleaned and kept in appropriate state of repair	Authority
6.10	Tools, machinery and equipment used in the food manufacturing are cleaned before and after production	2
7.0	PERSONNEL AND STAFF HYGIENE	/10
	*Workers medically examined at least two times a year and recorded in the factory's medical register	3

7.2	Protective gear and uniforms are provided at every	1	
	processing stage and workers wear them		
	accordingly		
7.3	Employees in manufacturing area not suffering	1	
	from any communicable diseases and/or without		
	cuts, wounds scabies, skin rash or long nails		
7.4	Employees do not wear jewelry, watches, pins or	1	
/	other items unless secured to prevent		
	contamination		
7.5	Employees wash their hands every time before	2	
1.5	commencing their work, after each absence from		
	the work station or at any other possible hands		
	contamination		
7.6		1	
7.6	Employees do not pick nose, scratch skin, sneeze,		
7 7	smoke, spit or eat while processing food		
7.7	Visitors to food processor wear protective gear	1	
	and adhere to personal hygiene requirements		
8.0	STORAGE	/10	
8.1	Adequate facilities for storage of raw materials,	2	
1	finished product and non-food material provided		
	separately.		
8.2	The items stored on racks or pellets	2	
8.3	Storage area designed to prevent pests,	2	
0.0	contamination and degradation of ingredients,		
	finished products or packing material from dust,		
	debris and any other environmental factors		
8.4	Product stacking system to allow proper product	1	
	rotation		
0.5			
8.5	*Presence of humidimeter, thermometer,	3	
	calibrated and respective records kept		
9.0	PESTS	/6	
9.1	*Pesticides and other chemicals are kept safely in	2	
	a separate room		
9.2	Pesticides recommended for use and handled by	2	
	trained personnel		
9.3	Fumigation schedules in place and adhered to	2	
7.5	i unigation schedules in place and adhered to	_	A
10	RECORDS		
10. 0	KECOKDS	/0	105
10.1	Quality control (Physical, chemical and	2	
	microbiological)		
10.2	Medical examination records	1	
10.3	Cleaning and disinfections/ disinfestations records	1	
10.4	Maintenance and calibration records	1	

10.5	Distribution and recall records	1	
	GRAND TOTAL	130	

*These are critical defects.

IMPLEMENTATION

- 1. Premises scoring 80 to 100 points will be registered and licensed provided that score of each individual critical defect(s) is more than 50%.
- Premises scoring between 65 and 79 points shall be deemed to qualify for registration and license provided that score of each individual critical defect(s) is more than 50%. However, the owner shall be served a notice of a maximum of three months to improve the condition of his/her facility.
- 3. Premises scoring between 55 and 64 points shall neither be registered nor licensed. However, the owner shall be served a notice of a maximum of three months to rectify defects.
- 4. Premises scoring 54 points and below shall neither be registered nor licensed. Similarly, it shall be served with a closure notice according to Law N° 47/2012

INSPECTOR'S CERTIFICATION

A). (Name) Authorized officer having inspected the above premises do/do not recommend the premises be registered and or licensed because points scored are...... and or critical defect(s) noted is/are:

Signature:	Date:
(Authorized officer)	

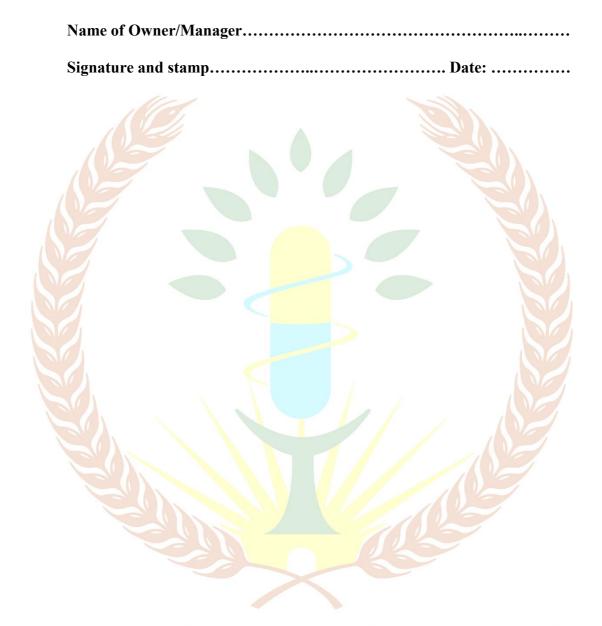
B).I,..... (Name) Authorized officer having inspected the above premises do recommend the premises be served with a notice to rectify defects* or closure*because point's score dare.....and critical defects noted is/are

anda Food and Drugs Authority

Signature.....Date.....Date.

OWNER'SCERTIFICATION

I certify that the above-named authorized officer has inspected my premises and that the markings and decisions made above are true.



RWANDA FDA Rwanda Food and Drugs Authority

ODG/REP/O/FDA/02/2021