Uganda Bureau of Statistics

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Uganda Food Balance Sheets

Report 2013 -2018

September 2020

AFRICAN DEVELOPMENT BANK GROUP

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ABBREVIATIONS and ACRONYMS

AAS	Annual Agricultural Survey
AfDB	African Development Bank
CPC	Central Product Classification
CV	Coefficient of Variation
DAES	Directorate of Agriculture and Environment Statistics
DER	Dietary Energy Requirement
DES	Dietary Energy Supply
DMES	Directorate of Macro Economics Statistics
DPSS	Directorate of Population and Social Statistics
EAC	East African Community
FAO	Food and Agriculture Organization of the United Nations
FBS	Food Balance Sheets
FLI	Food Loss Index
GDP	Gross Domestic Product
GSARS	Global Strategy for Improving Agriculture and Rural Statistics
HS	Harmonized System
ICBT	Informal Cross Border Trade
MAAIF	Ministry of Agriculture, Animal, Industry and Fisheries
MDA	Ministries, Departments and Agencies
MDER	Dietary Energy Requirement
MSCD	Minimum Set Core of agricultural Data
NARO	National Agricultural Research Organisation
NASS	National Agricultural Statistics System
NASTC	National Agricultural Statistics Technical Committee
NGOs	Non-Government Organizations
NSS	National Statistics System
NDP	National Development Plan
PNSD	Plan for National Statistical Development
PoU	Prevalence of Undernourishment

SDGs	Sustainable Development Goals
SPARS	Strategic Plan for Agricultural and Rural Statistics
SUAs	Supply and Utilization Accounts
SUT	Supply and Use Table
TA	Technical Assistance
TCF	Technical Conversion Factors
TFP	Thematic Focal Person
TTWG	Thematic Technical Working Group
TWG	Technical Working Group
UBOS	Uganda Bureau of Statistics
UCA	Uganda Census of Agriculture
URA	Uganda Revenue Authority
USDA	United States Department of Agriculture

PREFACE

The vision for Uganda Strategic Plan for Agricultural Statistics (SPARS) 2018/19 – 2024/25 is to provide an integrated and coordinated agriculture and rural statistics system of the country. The implementation of this Plan shall result in availability of high-quality data on food and agriculture statistics. The compilation of the Food Balance Sheet (FBS) is one of the initiatives towards this process. The FBS constitutes an essential decision-making tool in analyzing the food security situation in the country.

Thanks to theTechnical Assistance (TA) received from the African Development Bank (AfDB), a robust FBS system has been established in the country, enabling the compilation of FBS for Uganda using the recommended methodological guidelines at that end. This work was carried out by Uganda Bureau of Statistics (UBOS) in close collaboration with Ministry of Agriculture, Animal Industry and Fisheries (MAAIF).

The FBS results provide data on national food supplies and utilization. It is used to estimate the country's dietary energy supply per capita, as well as proteins and fats dietary contents in a given year. The FBS basic information helps also to establish the extent to which a country is self-sufficient or depends on imports to feed itself. Furthermore, the FBS can be used to measure and monitor progress of some of the Sustainable Development Goal (SDGs) indicators of food security, namely the prevalence of undernourishment and food loss index.

The AfDB support has led to building a sustainable foundation for generating internationally comparable FBS data. Indeed, in addition to strengthening the capacity of the national Technical Working Group (TWG) on FBS in this field, which enables continued FBS compilation in Uganda, the first FBS results and related report of this kind in the history of the country has been produced for the years 2013-2018. UBOS and MAAIF are extremely grateful to AfDB for the technical assistance received during this exercise, and are committed to a regular compilation and publication of the FBS in Uganda.

ACKNOWLEDGEMENT

The Food Balance Sheets 2013-2018 report provides a comprehensive picture of the pattern of food supply and utilisation in the country. It is generated from the compilation exercise of Supply and Utilization Accounts (SUA) of food commodities based on the international statistical standards, the framework of the Global Strategy for Improving Agriculture and Rural Statistics (GSARS).

The Uganda Bureau of Statistics would like to express its gratitude to all those who made this possible. Special thanks go to the African Development Bank (AfDB) through Mr. Charles L. Lufumpa (Director of Statistics Department) and Mr. Ben Paul Mungyereza (Manager of the Statistical Capacity Building Division) who responded positively to our request and provided necessary Technical Assistance. The Bureau is also greatly indebted to AfDB experts headed by Mr. Vincent Ngendakumana (Principal Agriculture Statistician) who provided expertise during the compilation of Food Balance Sheets.

At country level, the Food Balance Sheets compilation process, as well as this resulting report have been handled by a dedicated Technical Working Group (TWG) on Food Balance Sheets. The members of the TWG who are in Annex 5 of this report, as well as all other stakeholders who have been consulted to provide basic data and input to the process are greatly appreciated.

Last but not least, we would like to thank Mr. Patrick Okello (Director of Agriculture and Environmental Statistics) at UBOS for spearheading the process and leading the national Technical Working Group on Food Balance Sheets, together with Mr. Richard Ndikuryayo, the then Assistant Commissioner Agricultural Statistics and Planning at MAAIF.

Chris N. Mukiza(PhD)
EXECUTIVE DIRECTOR

EXECUTIVE SUMMARY

1. Introduction

FBS is a national accounting/statistical framework showing a comprehensive picture of the measure of food supply and related uses in the country's population during a specified reference period. It shows the quantities and types of food available for human consumption as well as potential sources of both supply and utilization of a given food product.

The FBS is used to estimate the Dietary Energy Supply (DES), measured by the number of kilocalories per person per day, as well as protein and fats dietary contents. The DES is an essential indicator to analyze the food security situation in a country. Other key indicators that can be generated from FBS data include food Self-Sufficiency Ratio (SSR), Import Dependency Ratio (IDR), Food Loss Index (FLI) and the Prevalence of Undernourishment (PoU). The two last are among the SDGs on which countries, including Uganda, have committed to, in order to monitor on a regular basis its food security situation. In brief, the FBS statistics provide a useful and required basis for policy analysis and decision-making to ensure food security.

Given the importance of FBS statistics in food security analysis and in following up some SDGs indicators, Uganda has included in its SPARS the establishment of a robust FBS compilation system in order to help in measuring and analyzing the overall food availability situation in the country. Hence, this first ever Uganda FBS 2013-2018 Report has been prepared with TA from AfDB.

2. Approach and data sources

The compilation of Uganda FBS 2013-2018 started with the development of the road map that outlined key activities, timeline indicating the schedule, milestones, deliverables, and expected resources to establish a robust and sustainable Supply and Utilization Accounts (SUA) and FBS statistics system.

Following the Global Strategy guidelines for the compilation of FBS, a multi-sectoral TWG_FBS was established to technically coordinate the Uganda FBS compilation process. The key institutional players were UBOS and MAAIF. Involved key activities were: SUA/FBS basic data collection, National training workshop, Data compilation using a developed FBS Tool, Data validation and Report writing.

The data sources included relevant Ministries Departments and Agencies (MDAs) (e.g. UBOS, MAAIF, Uganda Revenue Authority (URA), and National Agricultural Research Organisation (NARO), etc.), private sector, commodity organizations and associations.

3. Key results

a. Food supply per capita per year

The data shows that food availability from starchy roots was estimated at an annual per capita averaging 120.7Kg for the period under review 2013-2018, see Table 1. The fruits were at 103.2Kg, Cereals at 77.8Kg and alcohol at 70.7Kg. There was a decline in starchy roots food availability since 2013 at 130.5 Kg to 100.9 Kg in 2018, mainly due to the reduction of the production of sweet potatoes and the increase of the export of cassava over the period under review. Also, the food availability from cereal products dropped in 2016 and 2018 due to the drop in the production of maize (-11%) and millet (-9%), and the increase in the exports for both maize and sorghum of 33% and 39 % respectively from 2017 to 2018.

Table 1: Food supply per capita and per year (Kg) of main commodity Groups

Commodity Groups	2013	2014	2015	2016	2017	2018	Average
Starchy Roots	130.5	125.2	125.1	121.2	121.0	100.9	**120.7**
Fruits & Products	121.4	122.5	121.1	86.0	85.8	82.5	**103.2**
Cereals & Prod. Excl Beer	79.1	79.6	79.1	73.7	79.8	75.7	**77.8**
Alcohol (Beer & Wine)	74.8	80.2	73.1	72.9	63.0	60.3	**70.7**
Milk & Products	43.2	43.2	41.8	40.8	38.9	39.4	**41.2**
Pulses & Products	24.2	27.0	23.1	18.6	19.3	18.1	**21.7**
Sweeteners	18.8	16.1	18.2	16.6	18.6	17.6	**17.7**
Oil crops (Excl. Prod.)	13.5	13.6	12.8	12.7	12.6	12.5	**13.0**
Vegetable Oils & Prod.	9.2	11.0	10.5	11.4	11.9	11.8	**11.0**
Fish and Fish Products	10.4	11.4	10.7	10.7	11.3	11.6	**11.0**

b. Trend in Dietary Energy Supply (DES) per Capita per day (Kcal) from vegetal and animal sources

The total DES (Kcal/cap/day) was above 2,000 for all the years, from 2013 – 2018. The year 2014 had the highest DES while 2018 had the least. See Table 2.

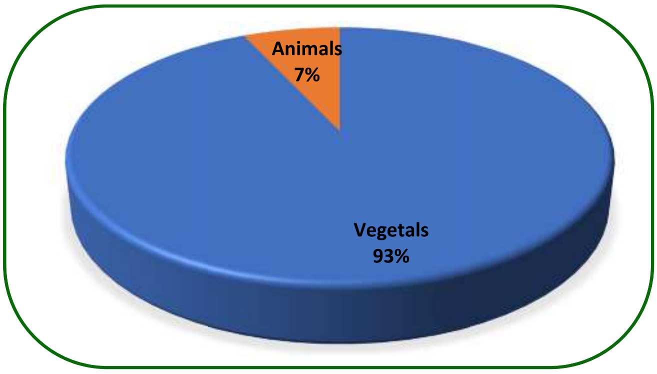
Table 2: Trend of Dietary Energy Supply (Kcal/cap/day) from vegetal and animal sources in 2013-2018

	2013	2014	2015	2016	2017	2018
Total	2,336	2,368	2,310	2,133	2,203	2,083
Vegetal products	2,179	2,209	2,155	1,979	2,054	1,932
Animal products	157	159	155	154	150	151

c. Average contribution of vegetal products and animal products to the total of DES

From the DES (Kcal/cap/day) average over the period 2013-2018, 93% was contributed by the vegetal products. The animal products (including fisheries) contributed only 7%. See Figure 1.

Figure 1: Average contribution of vegetal products and animal products to the total of DES



d. Average contribution of Groups of Vegetal products to DES per Capita per day (Kcal)

In 2013-2018, the cereals (30.2%) were the main contributor to DES per capita per day from vegetal products. They were followed by Starchy Roots, Vegetable Oils and Fruits. See Table 3.

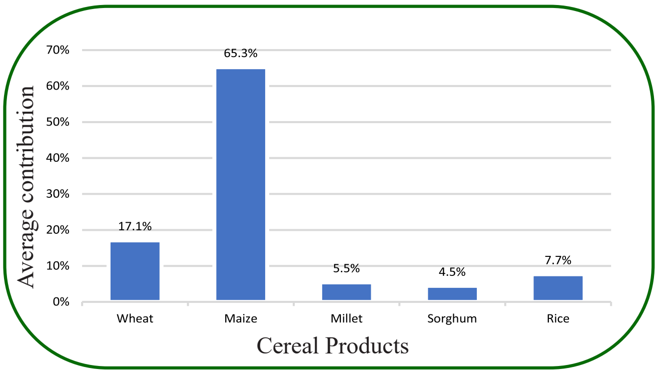
Table 3: Average contribution of Groups of Vegetal Products to DES per Capita per day (Kcal)

groups of Vegetal products	2013	2014	2015	2016	2017	2018	Average contribution	%
Cereals & Prod. Excl Beer	652	642	640	592	640	608	629.0	30.2
Starchy Roots	369	353	352	342	342	289	341.2	16.4
Sweeteners	181	156	176	161	179	170	170.5	8.2
Pulses & Products	224	250	214	172	179	168	201.2	9.6
Oil Corps (Excl. Prod.)	137	139	127	131	131	127	132.0	6.3
Vegetable Oils & Prod.	222	267	254	275	289	286	265.5	12.7
Fruits (Excl. Wine)	295	298	294	209	209	200	250.8	12.0
Others	98	104	98	97	86	84	84.2	4.5
Total	2,179	2,209	2,155	1,979	2,054	1,932	2,084.7	100.0

e. Average contribution of cereals commodities to the total calories of cereals

During the same period under study, maize was the most important commodity within the cereals. In fact, its percentage contribution to the DES (Kcal/cap/day) was 65.3%. Wheat and rice contributed 17.1% and 7.7% respectively. The oth types of cereals were millet and sorghum produc which both contributed 10% to the total calories cereals. See Figure 2.

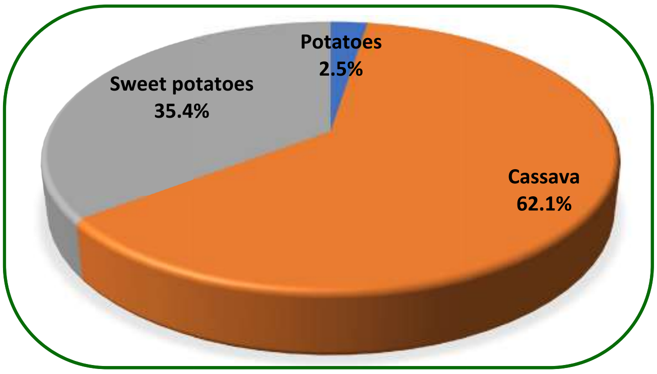
Figure 2: Average contribution of cereals to the total calories of Cereals products



f. Average contribution of Starchy roots commodities to the total calories of Starchy roots

Cassava contributed the most to DES per capita per day from the starchy roots' category, at 62.1%, followed by sweet potatoes at 35.4%, in 2013-2018. Potatoes and products recorded the lowest contribution of 2.5% of calories supplied within the starchy roots' category. See Figure 3.

Figure 3: Contribution of Starchy roots commodities to the total calories of Starchy roots



g. Average contribution of commodities to the total dietary energy supply of fruits

Out of all the fruits, plantain (Matooke) was the most important one and its contribution to the DES was 99.4% over the period 2013-2018, while banana consumed as fruit contributed only 0.6% to the total of calories supply of the group. See Table 4.

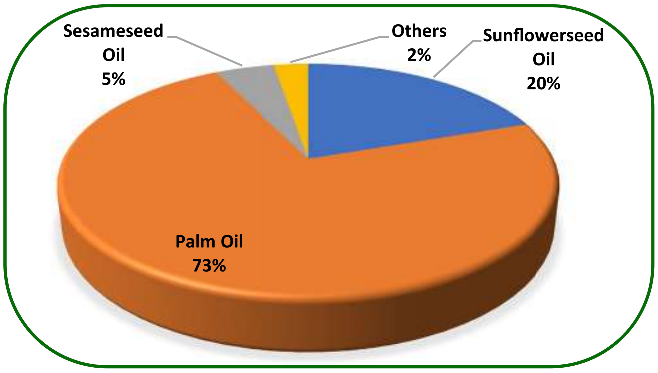
Table 4: Contribution of fruit commodities to the total dietary energy supply (%) of fruits

Commodity	2013	2014	2015	2016	2017	2018
Plantains	99.3	99.3	99.3	99.4	99.4	99.4
Bananas	0.6	0.6	0.6	0.6	0.6	0.6
Other	0.1	0.1	0.1	0.0	0.0	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0

h. Average contribution of vegetable oil commodities to the total calories of Vegetable oils

Most of DES (Kcal/cap/day) was brought by the palm oil. In fact, its contribution to the total DES of the group of vegetable oils was 73% in 2013-2018. See Figure 4.

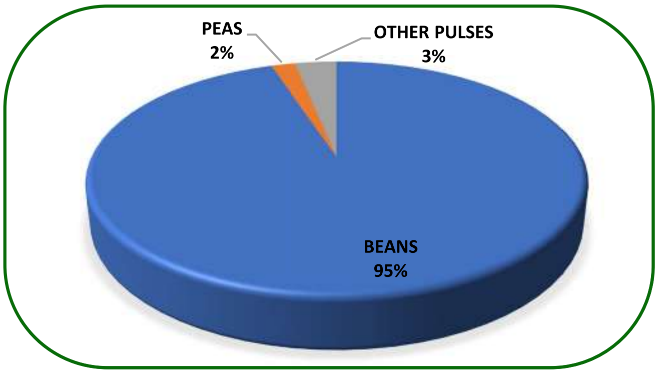
Figure 4: Contribution of Vegetable oil commodities to the total calories of Vegetable oils



i. Contribution (%) of commodities to the total dietary energy supply of pulses

With regard to pulses, most of DES (Kcal/cap/day) was brought by beans. In fact, during the period under study, its contribution to the total DES of the group of pulses was 95%. See Figure 5.

Figure 5: Contribution of pulse commodities to the total calories of Pulses



j. Contribution of animal commodities to the total calories (Kcal/cap/day) of Animal products

Milk contributed almost half (46%) to the total DES of animal products, in 2013-2018. The average contribution of meat (Bovine meat, goat meat, sheep meat, poultry meat) was 31 % of the total of calories of animal products. The fishery products contributed 13%, while the other animal products (animal fats, offals, eggs) contributed only 9% to the total DES of animal products. See Figure 6.

Figure 6: Average contribution of animal commodities to the Total DES of animal products

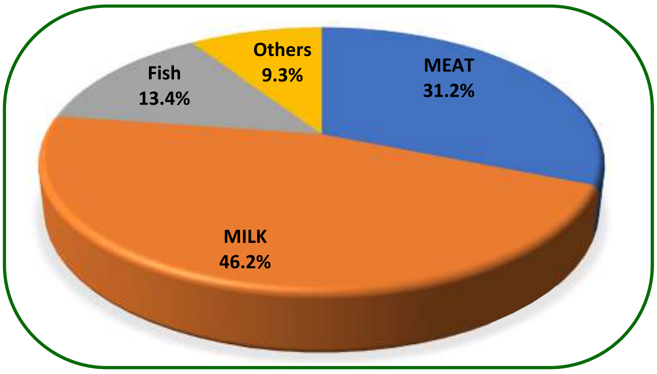
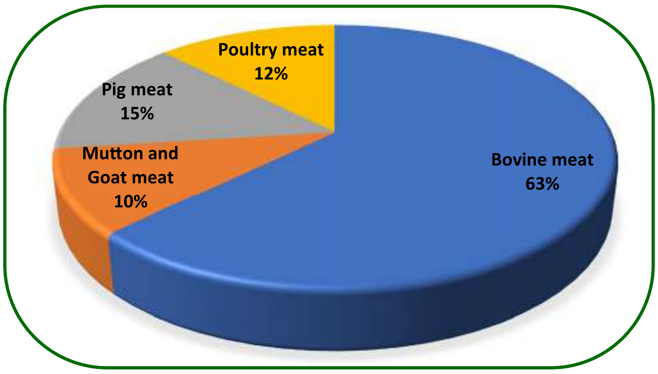


Figure 7: Average contribution of types of meat to the Total calories of Group of meat



k. Average contribution (%) of types of meat to the total calories of group of meat

Out of all types of meat, the bovine meat was the most important in terms of contribution to the total DES (Kcal/cap/day) of meat (63%), as observed in 2013-2018. Pig meat and poultry meat contributed respectively 15% and 12% to the total calories of meat. See Figure 7.

l. Supply of proteins and fats

The supply of proteins fluctuated between 48 and 57 g/cap/day, while the supply of fats was between 51 and 56 g/cap/day.

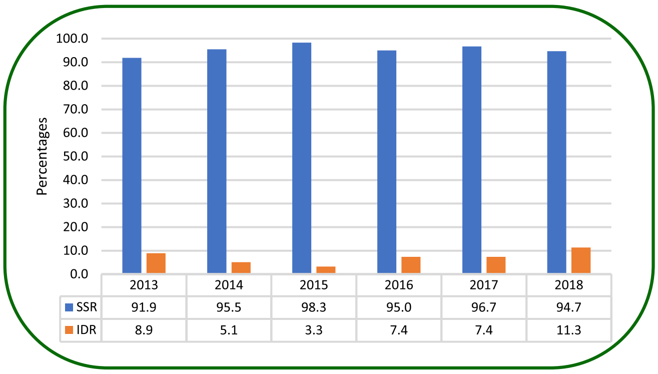
Table 5: Supply of proteins and fats

Food nutrients	2013	2014	2015	2016	2017	2018
Proteins (g/cap/day)	56	57	54	49	51	48
Fats (g/cap/day)	51	56	53	55	56	55

m. Self-sufficiency ratio and Import Dependency ratio

Uganda's self-sufficiency ratio (SSR) and import dependency ratio (IDR) for the period 2013-2018 averaged 95.4% and 7.2%, respectively. This means that for the period 2013-2018, Uganda's domestic food production was not enough to bridge the domestic utilization gap. And that 7.2% of the food was imported to meet domestic utilization. See Figure 8.

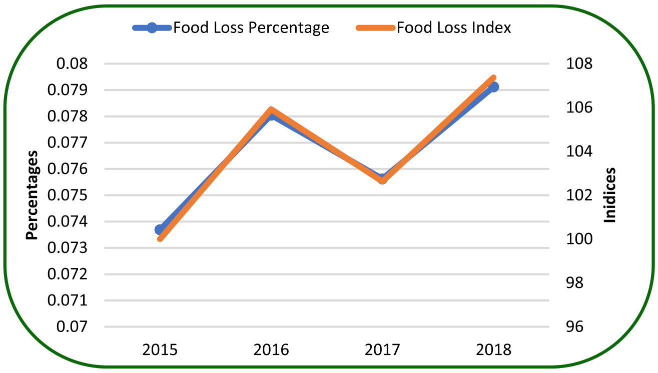
Figure 8: Self-sufficiency ratio and Import dependency ratio (%)



n. Food Loss Percentage and Food Loss Index

The Food Loss Index (FLI) is the indicator used to measure and monitor food losses along the supply chain, from production to retail level. The Food Loss Percentage for Uganda from 2015 to 2018 was estimated at an average of 7.7%, implying that 7.7% of the key commodities was lost along the supply chain and did not reach the retail stage. See Figure 9.

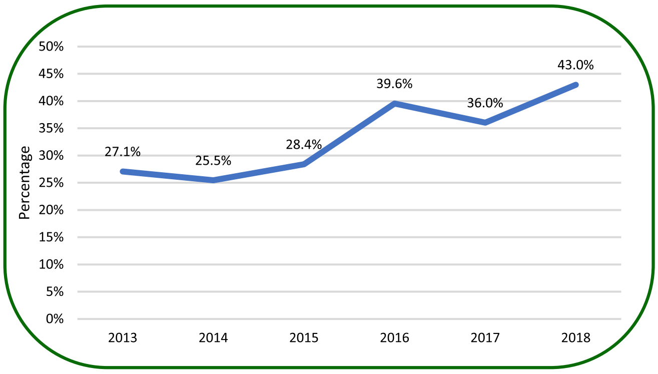
Figure 9: Food loss percentage and Food loss index



o. Prevalence of Undernourishment

Undernourishment means that a person is not able to acquire enough food to meet the daily minimum dietary energy requirements, over a period of one year. As per Figure 10, in Uganda, the Prevalence of Undernourishment (PoU) increased from 27.1% in 2013 to 43.0% in 2018 growing at an average annual rate of 9.5%. This is categorized as a high prevalence.

Figure 10: Prevalence of undernourishment



p. Comparison of Uganda FBS results and PoU as produced by the country with FAO data

- Comparison of Uganda and FAOSTAT FBS data (See Table 6)

FAO has published country FBS data onto FAOSTAT website up to 2017. In 2013-2017, Uganda's average DES per capita per day (2,270 Kcal/Cap/Day) appears to be higher (with about 100 more Kcal/Cap/Day) than the FAO estimate (2,177 Kcal/Cap/Day). With regard to daily per capita proteins supply, Uganda results were averagely same as the FAOSTAT estimates while the daily per capita fats supply is higher (with about 10 more gr/cap/day) than the FAOSTAT estimate.

The differences observed are explained by the use of official data as reported by the country, like the population data and production figures (beans dry, banana, plantain, cassava and milk).

Table 6: Comparison of Uganda results with FAOSTAT

Indicator		2013	2014	2015	2016	2017	Average for 2014 - 2017
DES per Capita per day (Kcal)	Uganda	2,336	2,368	2,310	2,133	2,203	2,270
	FAOSTAT	2,126	2,256	2,176	2,132	2,143	2,177
Daily per capita Proteins (grams)	Uganda	56	57	54	49	51	54
	FAOSTAT	53	54	53	53	52	53
Daily per capita Fats (grams)	Uganda	51	57	53	56	57	55
	FAOSTAT	47	49	45	44	45	46

- Comparison of PoU and undernourished population as calculated by Uganda with FAO results (See Table 7)

According to the FAO results published in «*The State of Food Security and Nutrition in the World*»[1] , the average of PoU for Uganda was 37.5%, 39.7%, and 41.0% for the periods 2014-2016, 2015-2017 and 2016-2018, respectively; while the population undernourished (millions) was 15.1, 16.5, and 17.6 for the periods 2014-2016, 2015-2017 and 2016-2018, respectively. These results were higher than the country results for the same periods. The same trend was also observed for the population undernourished.

Table 7: Comparison of Prevalence of Undernourishment and population undernourished as calculated by the country with FAO results

	2014-2016		2015-2017		2016-2018	
	Country	FAO	Country	FAO	Country	FAO
Prevalence of undernourishment (%)	31.1	37.5	34.7	39.7	39.5	41.0
Population undernourished (Millions)	10.9	15.1	12.5	16.5	14.6	17.6

The difference in the data from the two sources are attributed to the same reasons as for those observed for DES, such as the use of different population estimates, among others. Whereas the UBOS population projections were used to compute the PoU, FAO used data from *World Population Prospects*[2]. In addition, the MDER which are inputs in the PoU calculation were also different for the two sources.

In conclusion, the Uganda FBS results, as well as resulting estimates of PoU and Population undernourished are valid, as the observed differences with FAO data were due to the better quality of basic data used by the country.

4. Constraints

The main constraint relates to lack of complete and accurate data, for some commodities/SUA elements. In such cases, missing data were estimated or imputed to generate the SUA/FBS components. Since this exercise is the very first of this kind, there was also lack of country reference data that could have possibly been used when validating the FBS results. The COVID-19 pandemic disrupted the process with a country lockdown; no

[1] The links to download the reports:
http://www.fao.org/3/ca5162en/ca5162en.pdf
http://www.fao.org/3/i9553en/i9553en.pdf
http://www.fao.org/3/a-I7695e.pdf

[2] https://population.un.org/wpp/

office business and meetings were allowed anymore to ease and enable face-to-face TWG working meetings.

5. Lessons learnt

The multi-sectoral TWG_FBS shared knowledge and capabilities of how to generate data, manage inconsistencies and estimate or impute the missing data. This led to timely delivery of the needed data and thus consistent FBS estimates were produced. The compilation of FBS enabled the estimation of nutritional availabilities in terms of per capita food supplies, energy, protein and fat contents. The Food Loss Index and Prevalence of Undernourishment are important indicators used to monitor progress of the SGDs, and the country is now able to report on it. The FBS helps to understand the nature of food security and agricultural situation in the country.

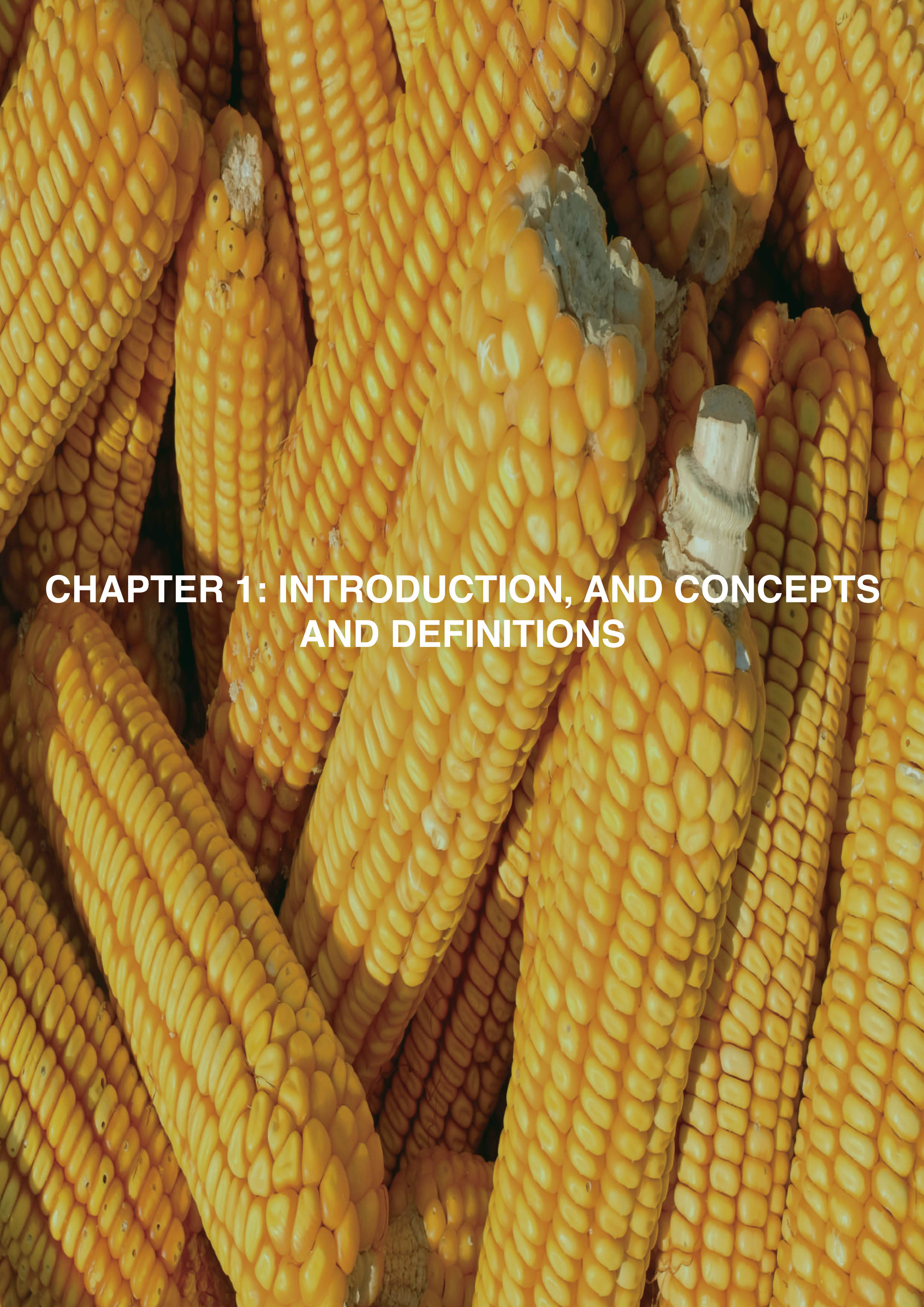
6. Conclusions and Recommendations

This is the first comprehensive FBS report for Uganda ever produced and it complies with the international standards for compilation of FBS. It lays a foundation for future FBS compilation in Uganda. However, the reliability of FBS results depends on the availability and accuracy of the related input/basic SUA/FBS data, particularly production, trade, food utilization and population figures, among others. It is therefore important that all stakeholders commit themselves to improving the input/basic SUA/FBS data for compiling FBS.

In order to improve future FBS compilation cycles, the TWG_FBS would like to make the following recommendations:

- To further bridge the gap of missing data for compilation of FBS, it is recommended that the regular censuses (e.g. National Livestock Census) and surveys (e.g. Annual Agricultural Survey-AAS) incorporate data requirements for the FBS, and include data for most of the food commodities required for FBS compilation into the AAS. This will enable the generation of accurate and reliable country specific data that leads to quality FBS results;
- The FBS provides a sound basis for policy analysis and decision-making needed to ensure food security. The FBS should be therefore compiled every year and timely, in order to inform the policy makers in the agriculture sector. At that end, it is strongly recommended that the TWG_FBS start working on SUA/FBS compilation for the year t once key needed basic data are made available, and that not later than June of year t+1;
- The FBS is a very important tool for both the public and private sector players. It is recommended that other stakeholders involved in the food supply chain be involved in FBS compilation process. In addition to UBOS and MAAIF, other stakeholders that can participate may include manufacturing and industry players, NGOs (e.g. Eastern African Grain Council, etc.), and Farmers' associations.

CHAPTER 1: INTRODUCTION, AND CONCEPTS AND DEFINITIONS



1.1 Introduction

1.1.1 What is a Food Balance Sheet?

The FBS is a national accounting/statistical framework showing a comprehensive picture of the food supply and utilization in a given country during a specified reference period. It shows the quantities and types of food available for human consumption, specifying all potential sources of both supply and utilization of any food product.

The total supply of a given food product includes the amount produced, the amount imported, and the amount of the product that is either added to or taken from stocks.

Total Supply = Product + Imports – Stock variation[3]

The total utilization of a given food product includes the amount exported, losses along the supply chain, amount taken as livestock feed, amount for seed use, tourist food, food processing, food consumed, industrial use, and residual uses.

Total Utilization = Exports + Feed + Seed + Loss + Food processing + Food +Tourist food + Industrial use + Residual use

The quantities allocated to all sources of total supply must be equal to the quantities allocated to all sources of total utilization. The balancing of total supply and total utilization of food consumption is known as Supply Utilization Account (SUA). A sample blank SUA table for wheat and its products is showed in Table 8.

Table 8: SUA table (Blank example for Wheat and its products):

Product	Production	Imports	Exports	Stock change	Food proccessed	Feed	Seed	Loss	Net Tourist	Industrial use	Residual use
Wheat											
Wheat and meslin flour											
Bran of Wheat											
Uncooked pasta, not stuffed or otherwise prepared											
Germ of Wheat											
bread											
Bulgur											
pastry											
Starch of Wheat											
Wheat Gluten											
Wheat-Fermented Beverages											

[3] Stock change may be positive (when we add to stock) or negative (when we remove (withdrawal) from stock).

Derived products are thereafter converted into their respective primary equivalents (known as "standardization"), ensuring that the related SUAs are always balancing and combined into what is called FBS, together with other required supplementary information. For the purpose of ensuring consistency of concepts, the three last SUA elements (Tourist food, Industrial use and Residual use) are combined under a unique element, namely "Other uses", as it was in the past. An example of an FBS template (case of Cereals and Products excluding Beer) is showed in Table 9.

Table 9: SUA table (Blank example for Wheat and its products):

Food Balance Sheet 2018										**Population ('000)**					**38,469**
Products	**Domestic Supply (MT)**					**Domestic Utilization (MT)**						**PER CAPITA SUPPLY**			
	Prod	**Import**	**Export**	**Stock Variation**	**Total D.S**	**Processed**	**Loss**	**Feed**	**Seed**	**Other uses**	**Food**	**Per Year Food**	**Per Day Calorie**	**Per Day Protein**	**Per Day Fats**
	1000 Metric tonnes											**Kg**	**Kcal**	**Grams**	**Grams**
Grand Total													2083	48	55
VEGETABLE PRODUCTS													1932	37	46
ANIMAL PRODUCTS													151	11	9
CEREALS &PROD. EXCL BEER	**3652**	**761**	**615**	**-158**	**3957**	**421**	**214**	**270**	**49**	**92**	**2911**	**75.7**	**608**	**15**	**3**
WHEAT & PRODUCTS	23	657	34	0	646	0	19	0	2	9	616	16.0	120	4	1
BARLEY & PRODUCTS	0	31	1	0	30	0	0	0	0	1	30	0.8	7	0	0
MAIZE & PRODUCTS	2773	1	462	-158	2470	284	122	231	33	67	1733	45.0	381	9	2
RYE & PRODUCTS	0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0
OATS & PRODUCTS	0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0
MILLET & PRODUCTS	239	0	27	0	212	16	20	14	2	0	160	4.1	30	1	0
SORGHUM & PRODUCTS	372	18	91	0	298	121	47	25	4	0	101	2.6	23	1	0
CEREALS,OTHERS &PRODUCTS	0	0	0	0	0	0	0	0	0	0	0	0.0	0	0	0
RICE & PROD (MILLED EQ.)	246	55	0	0	301	0	6	0	8	15	272	7.1	47	1	0

1.1.2 Importance of FBS statistics

One of the major outputs of the FBS statistics is the estimation of Dietary Energy Supply (DES), measured by the number of kilocalories per person per day as well as proteins and fats dietary contents. The DES is an essential indicator to analyze the food security situation in a country. Indeed, when it is compared to Dietary Energy Requirements (DER), the average number of Kcal/per/day required by a person to be in a healthy and active condition, DES can be used to estimate the number of persons undernourished (Prevalence of Undernourishment). This food security indicator is one of the SDGs on which countries, including Uganda, have committed to, in order to monitor on a regular basis its food security situation. In addition to the DES, the data from FBS can also be used to generate other nutritional indicators, such as the quantities of fats and proteins per person and per day, to better assess the quality of the nutrition in a country and the evolution of diets overtime. Another important SDG that can be calculated from FBS results is the Food Loss Percentage/Food Loss Index.

Furthermore, the availability of complete and up-to-dated FBS statistics allows to measure self-sufficiency with respect to food production (ratio of domestic production to domestic demand) and a country's dependency to imports (ratio of imports to domestic demand). These metrics produced by commodity or at the aggregate level, constitute very useful pieces of information for decision-makers in the agricultural sector to assess the gaps in terms of food supply, as well as to better orient public and private investments.

On another hand, FBS is generated from a set of SUAs for all food commodities. As such, SUAs are a great way for enhancing the quality of related basic data, while ensuring the production of additional data on all concerned SUA variables of food commodities, including primary and derived products.

1.1.3 FBS compilation in Uganda

In 2015, Uganda benefited from FAO Technical Assistance on FBS compilation, using the old standard methodology. However, this training did not materialize into establishment of FBS system and production of related results/report, mainly due to inconsistencies in data series for some key commodities. Apart from that, MAAIF with the support of East African Community (EAC), has been compiling monthly commodity balances, but limited to some cereal products (maize, rice, etc.). This initiative did not comply with the required international standard method and was not sustainable, and therefore it was abandoned.

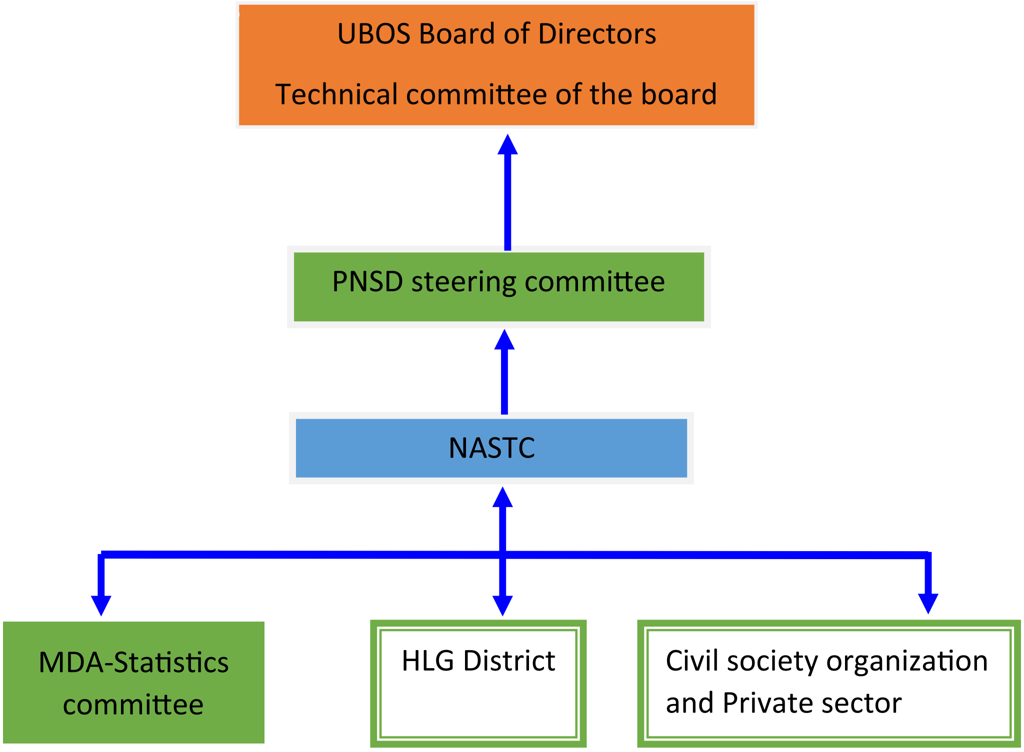
1.1.3.1 Justification for AfDB Technical Assistance to Uganda for FBS compilation

Since 2017, new Guidelines on the approach to be used for compiling SUA/FBS has been proposed to countries, including new features which aim at improving on how imputation of missing SUA basic data is done, how SUA/FBS identities for each commodity are balanced, etc.

Given the importance of FBS statistics in food security analysis and in following up some SDGs indicators, Uganda has included in its SPARS the establishment of a FBS compilation system, in order to help in measuring and analyzing the overall food availability situation in the country. However, due to lack of adequate skills in the compilation of FBS Statistics, Uganda has requested and obtained from AfDB, a Technical Assistance in this area.

1.1.3.2 Institutional framework for FBS compilation

To ensure the required coordination and sustainable compilation and production of FBS statistics in Uganda, related activities should be carried out within the existing Nation Statistical System (NSS) institutional/legal framework which can be summarized as following.



Since that the compilation of FBS is one of the proposed activities of the Strategic Plan for Agricultural and Rural Statistics (SPARS) of Uganda 2018/19-2024/25[4] , the institutional production of FBS statistics in Uganda should therefore be fully aligned to that of SPARS in particular, and to the Plan for National Statistical Development (PNSD) in general, hence under the leadership of NASTC. On another hand, the Plan states that "***UBOS will be the focal organization and custodian of the SPARS and it will be its responsibility to keep track of the implementation of the SPARS activities with support from MAAIF plus other relevant line ministries and agencies".***

Therefore, by waiting for the formal governance structure for SPARS implementation be established, a dedicated FBS Technical Working Group (TWG_FBS) was set up within the existing NASS legal framework as described in Chapter 2.

1.2. Concepts and definitions

The process of compiling FBS cannot be undertaken without a thorough understanding of the definitions of related key components. This section summarizes definitions of the SUA/FBS components, additional variables needed to estimate per capita nutrient availability, and some other FBS derived indicators.

1.2.1 SUA/FBS components

This section presents definitions of the components used in the compilation of the FBS. They are the variables that make up the Supply = Utilization identity.

Production + Imports – ΔStocks = Exports + Food + Feed + Seed + Tourist Food + Industrial Use + Loss + Residual Use

[4] The vision of this Plan has been defined as following: "An integrated and coordinated agriculture and rural statistics system".

1.2.1.1 Production

This refers to all production quantities of a given agricultural commodity within a given country, including both commercial and non-commercial agricultural production (such as that from home gardens or subsistence agriculture).

This component includes both crops, livestock, and fisheries. The component comprises production of food primary as well as processed products. The production of primary products is reported at the farm-gate level, so that it does not include harvest loss. The quantity of processed products for a given commodity refers to the volumes of output obtained after the transformation of that commodity.

1.2.1.2 Imports and Exports

The general definition of imports and exports cover goods and services. However, in the framework of FBS, this coverage is restricted to goods.

An import refers to a product brought into a given country from an external source. It is the trans-boundary flow of goods destined for a given final destination country that add to the total supply of goods available in that country.

Exports can be understood as trans-boundary flow of goods from a given country of origin. It is the trans-boundary flow of goods from a given country of origin that take away from the total availability of goods in that country.

It is important to underline that re-export, which refers to goods that enter and exit a given country without any type of transformation, should be added to exports. It should be noted that imports and exports estimates should endeavor to cover both official and unofficial trade flows.

1.2.1.3 Stocks

Stocks are defined as the aggregate total of products allocated to storage for later use. In the case of FBS, the stocks variation is considered and not the quantities of stocks themselves. It comprises changes in stocks occurring during the reference period at all levels from production to retail level. Stock variation is defined as closing stocks minus opening stocks.

Stock change may be positive (when we add to stock) or negative (when we remove (withdrawal) from stock).

1.2.1.4 Food availability

The concept of "Food availability" in respect of FBS refers to quantities of any substance, whether raw, processed or semi-processed (including drinks) available for human consumption during a given reference period at the retail level by the country's resident population.

For this reason, any waste (and/or loss) that occurs at the retail or consumer levels is included in this quantity, since that food was technically available for human consumption.

1.2.1.5 Food processing

Food processing refers to quantities of a food products that are directed toward a manufacturing process and are then transformed into a different edible commodity. Food processing quantities are linked to the production of derived commodities through extraction rates.

1.2.1.6 Feed

Feed is defined as all quantities of commodities -both domestically produced and imported- that are available for feeding livestock.

1.2.1.7 Seed

Seed is defined as any quantity of a commodity set-aside for reproductive purposes. This can include seed for sowing, plants for transplanting, eggs for hatching, and fish used as bait. Seeds use in a given year t is a function of a seeding rate and a sown area in the following year, t+1.

Seeds use $(MT)_t$ = Seed rate ($\frac{MT}{HA}$) * Sown area $(HA)_{t+1}$

MT: Metric Tonne; HA: Hectare

1.2.1.8 Loss

Food loss refers to the quantities of a product that leave the supply chain and are not diverted to other uses. Loss results from an involuntary activity and can occur at any node of the supply chain after the harvest and up to (but excluding) the retail/consumption stage.

1.2.1.9 Tourist food

Tourist food refers to food that is available for consumption by non-resident visitors in a given country during the course of their stay. This variable is expressed in net terms in the FBS (as food available for consumption by incoming visitors minus food that would have been consumed by residents who have travelled to other countries).

1.2.1.10 Industrial use

Industrial use is defined as any quantity of a given food product used in some non-food transformation or manufacturing process, including products used in biofuels, cosmetics, detergents, or paints

1.2.1.11 Residual and other uses

Residual and other uses can, in most cases, be defined as the combined imbalance and accumulated error in the supply equals utilization equation. As such, this category is computed ex-post as a balancing item and is not independently estimated. If all other utilizations within the equation are accounted for, and there is no measurement error, then the residual would be calculated as zero.

1.2.2 Additional variables

The basic supply and usage components described above cover all aspects of basic identity. However, using the FBS Tool, some additional variables are needed to estimate per capita nutrient availability. These include the following.

Population: This is defined according to the UN Population Division's (UNPD) definition as, "de facto population in a country, area or region as of 1 July of the year indicated." This definition includes not only citizens, but also all other residents.

Extraction rates: These are parameters that reflect the loss in weight in the conversion of a given primary product to the derived product. Extraction rates are typically expressed as a percentage, and are calculated as the amount (by weight) of the derived product that is produced using a given amount of input product.

Processing shares: In the context of the FBS, processing shares are percentages of the amount of a given commodity that are thought to be dedicated to a specific transformation process. They are often necessary for the composition of FBS because goods can be processed into a range of derived products, and the input used for the production of these derived goods is seldom known with certainty. As such, shares can be applied to the amount of a good sent for processing to calculate the volume of input into a given transformation process. An extraction rate can then be applied to those inputted quantities to derive a production estimate.

1.2.3 FBS derived indicators

In the course of analyzing the food situation of a country, one of the important aspects is to know how much of the available domestic food supply has been imported and how much comes from the country's domestic production. There are two (2) indicators used to measure these aspects; The Self-Sufficiency Ratio (SSR) and the Import Dependency Ratio (IDR). These indicators are used to portray the capacity of a country to feed its people based on its own production and/or food imports from other countries.

1.2.3.1 Self-Sufficiency Ratio (SSR)

This indicator compares the magnitude of a country's agricultural production to its domestic utilization. It is computed as below.

$$SSR = \frac{Production}{(Production + Imports - Exports - \Delta Stock)} \times 100$$

1.2.3.2 Import Dependency Ratio (IDR)

This indicator compares the magnitude of a country's imports to its domestic utilization. It is computed as below.

$$IDR = \frac{Imports}{(Production + Imports - Exports - \Delta Stock)} \times 100$$

The minimum value for SSR and IDR is zero. These two indicators are not expected to have negative values for the simple reason that none of the involved variables (production, import and domestic supply) can be negative. However, SSR and IDR can be more than 100%. When the SSR is more than 100%, it means that the production is higher than the domestic use. In this case, the surplus represents the proportion of net exports and/or transfers to stocks.

In the same logic, when the IDR of a given commodity is higher than 100%, it means that the quantity exported plus the quantity transferred to stocks is higher than the production of that commodity.

Computing SSR and IDR at an aggregate level which involves heterogenous products (e.g. grand total, vegetal products group, and animal product group), requires the weight of such products to be converted first in a standard and homogeneous unit, such as caloric contents.

1.2.3.3 Food Loss Index

The objective of the Sustainable Development Goal (SDG) 12 is to "Ensure sustainable consumption and production patterns", with the more specific Target 12.3 which aims at "By 2030, to halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses, food loss percentages by commodity and in aggregate by country". The Food Loss Index (FLI) is the indicator used to measure and monitor food losses along the supply chain, from production to retail level. The purpose of this index is to allow for policy makers to look at the positive and negative trends in food loss over time. Analyzing the trend (versus the level) helps monitoring the food supply system in order to improve efficiency against food losses.

The steps for compiling the FLI from FBS data are as follows:

a. Select basket of commodities;
b. Compile Food Loss Percentages (FLP) for a given year;
c. Compile the FLI as a ratio of FLP in current period to FLP in base year; and
d. Interpret the results.

The selection of the basket of commodities is based on the international dollar value of the commodity in the base year. The default selection criterion followed at international level is to select 10 priority commodities as following:

- Compile value of production for every commodity;
- Group commodities by category and rank them; and
- Select the top two crops per category/commodity group.

The 10 commodities should be within the five main headings, with two commodities per heading (1. Cereals & Pulses, 2. Fruits & Vegetables, 3. Roots & Tubers and Oil-Bearing crops, 4. Animals Products, 5. Fish and Fish Products).

The Food Loss Percentage (FLP) over the commodity basket in a given year t is computed as following:

$$FLP_t = \frac{\sum_j L_{jt} * (q_{jt_o} * p_{jt_o})}{\sum_j (q_{jt_o} * p_{jt_o})}$$

Where:

L_{jt} = loss percentage (estimated or observed) for commodity j in year t;
t_o = the base year;
q_{jto} = Production plus Imports for commodity j in the base year;
p_{jto} = International dollar price for commodity j in the base year.

In addition to the FBS results, the computation of FLI requires data on commodity prices. The annual loss percentage for a commodity j is computed as the sum of the total value of losses for each year divided by the base year's production value.

The FLP is the average percentage of supply that does not reach the retail stage. It gives the average level of losses and these help countries to assess the magnitude of the problem relatively to other countries or in the international context. The FLP positions a country's food system efficiency and summarizes the magnitude of the problem.

The FLI is computed as a ratio of Food Loss Percentage (FLP) in the current period to the FLP in the base period multiplied by 100, as per the formula below.

$$FLI_t = \frac{FLP_t}{FLP_{t_o}} \text{ x } 100$$

The FLI shows how much losses move from the baseline value equal to 100 in the base year, thus it reveals trends in efficiency over time. For example, if the FLP changes from 20% in the base period (set at 100) to 15% in the current period, the FLI will return a value of 75 in the current year, meaning that there has been an efficiency gain of 25 percentage points in the food system, hence a higher share of total supply reaches the retail stage undamaged.
A detailed methodology for computing the FLI are in Annex 1.

1.2.3.4 Prevalence of Undernourishment

According to FAO, undernourishment is defined as the «*situation in which an individual's usual food intake is insufficient to provide the minimum dietary energy intake necessary for a normal, healthy and active life*". The Prevalence of Undernourishment (PoU) is an estimate of the proportion of the population whose habitual food consumption is insufficient to provide the dietary energy levels that are required to maintain a normal active and healthy life. It is expressed as a percentage of the population that is undernourished or food deprived. The undernourished or food deprived are those individuals whose food intake falls below the minimum level of dietary energy requirements.

The PoU is an indicator used for monitoring progress towards the second target of the SDGs, which stated as «*By 2030, eliminate hunger and make so that everyone, especially the poor and people in vulnerable situations, including taken infants, have access throughout the year to a healthy, nutritious diet and sufficient* ". It is useful in identifying national and global trends in population-level undernourishment. The PoU is also used to estimate the average per capita amount of additional energy (Kcal) that undernourished individuals need to consume to reach their average dietary energy requirement.

The computation of PoU is based on the calculation of four key parameters for a country: the average amount of habitual daily per capita food consumption (the food available for human consumption is used as a proxy), the level of inequality in access to food, the asymmetry in the distribution of habitual per capita consumption and the minimum dietary energy requirements of the population under analysis.

This indicator is defined within a probability distribution framework as follows:

$$P(U) = \text{P(x<MDER)} = \int f(x|DEC, CV, Skew)\ dx$$

Where:

- P(U) is the proportion of undernourished in total population;
- DEC is the average of the distribution of habitual daily per capita dietary energy consumption in the population;
- CV is the coefficient of variation of the distribution of habitual daily per capita dietary energy consumption in the population;
- Skewness is the skewness that characterize the asymmetry of the distribution of habitual

daily per capita dietary energy consumption in the population; and

- MDER is the minimum dietary energy requirements of the population.

This indicator ranges from 0% (no undernourished population) to 100% (the entire population is undernourished). Within a given country, a higher value of this indicator means that more people suffer from undernourishment (food deprivation). The following undernourishment categories are the most commonly used:

• <5%	Very low
• 5% - >14.9%	Moderately low
• 15% - >24.9%	Moderately high
• 25% - >34.9%	High
• 35% and over	Very high

A detailed methodology for computing the prevalence of undernourishment is in Annex 2.

CHAPTER 2: APPROACH AND METHODOLOGY

This chapter presents the methodology used in compiling the Uganda FBS. The methodology follows the new guidelines for the compilation of FBS developed in the framework of the implementation of the GSARS. Also presented are highlights of the key activities undertaken by the national FBS Team to compile the Uganda FBS. The Uganda FBS Team comprises of and the TWG_FBS members mainly from UBOS and MAAIF. The Uganda FBS team was supported by a National Consultant (hired by AfDB), and all of them guided by an International Consultant and the Principal Agriculture Statistician from AfDB. The Chapter also outlines details of how the data of the different components was obtained to compile SUA and generate FBS results.

2.1 Approach

This section outlines the activities undertaken to compile the Uganda FBS from the development of the roadmap to guide the process, putting up a FBS Technical Working Group (TWG_FBS), conducting the national training workshops facilitated by the AfDB International Consultant, to compiling SUAs, and generating, validating and analyzing FBS results.

2.1.1 Development of Roadmap

In July 2019, Uganda, through UBOS, requested AfDB for a Technical Assistance to develop the Uganda FBS. In response to that, the AfDB organized an initial mission to Kampala, from 9-18 September 2019, to assist the country in the development of a roadmap for the establishment of a robust FBS compilation system. The mission was composed of Mr. Vincent Ngendakumana, Principal Agriculture Statistician, AfDB and Mr. Salou Bande, International Consultant of AfDB.

In consultation with key stakeholders in UBOS and MAAIF, a roadmap was developed. The objective of the roadmap was to propose key activities, a timeline indicating the schedule, important milestones and deliverables, and expected resources to establish a robust and sustainable SUAs and FBS statistics system of Uganda. More specifically, the roadmap aimed at:

i. Recommending and describing the activities that should be carried out;
ii. Defining the required governance and institutional mechanism that would ensure the sustainability of a robust SUA/FBS compilation system of Uganda;
iii. Proposing a realistic timetable for the execution of these activities; and
iv. Identifying the necessary resources required to ensure a successful implementation of the identified activities.

2.1.2 Designing FBS Compilation Tool

The FBS Compilation Tool has been designed by AfDB and adapted to the specificities of the country. This Tool is based on the standard/international guidelines for FBS compilation, developed under the GSARS. Similarly, to the FBS guidelines, this Tool doesn't take into account the fishery products. In addition to that, the mapping of Harmonized System (HS) codes to Central Products Classification (CPC) codes can't be done by the Tool. Despite these shortcomings, it is a user-friendly Tool that facilitates the imputation of missing data using imputation models explained in the guidelines and the generation of Food Balance Sheets for a given year. In order to address the issues that are not handled by the Tool, the Technical Working Group performed the following activities:

- Compilation of fishery data and generation of FBS results for the same using Excel;
- Mapping HS codes to CPC in Excel before uploading it in the Tool.

2.1.3 Setting up a Technical Working Group

In order to establish a formal institutional framework for FBS compilation in Uganda, a dedicated Technical Working Group for FBS (TWG_FBS) was formed, within the existing NSS legal framework (See the Structure below). The TWG_FBS's main objective was to ensure the technical coordination of the collection and compilation of basic data and parameters for SUAs, as well as the preparation, validation, analysis and publication of FBS results. Specifically, it advised on the type of data to be collected and review the intermediate deliverables, such as SUA tables, technical parameters (e.g. technical conversion factors, nutritive factors, etc.), calculation methods and analyses of indicators. The TWG_FBS coordinated the FBS compilation and the sharing of information across the different participating institutions as well as setting the timelines and deliverables.

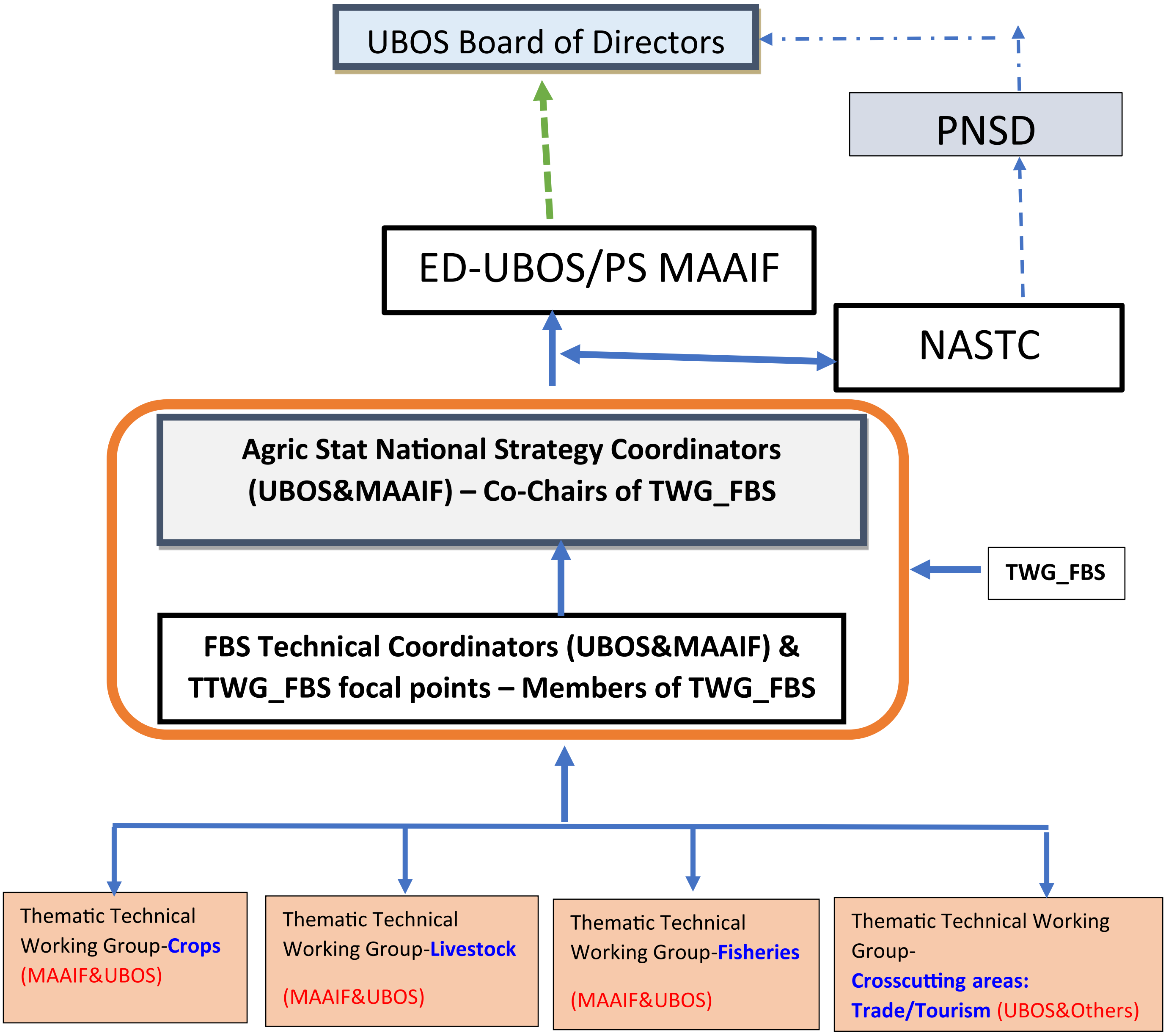
All subsectors of agriculture, including key relevant producers and users of FBS statistics were represented in this TWG_FBS. It was composed of the following:

- National Strategy Coordinator for Agricultural Statistics and his Alternate: They co-chaired the TWG_FBS and reported to NASTC, while UBOS Executive Director reported to MAAIF Permanent Secretary.
- FBS Technical Coordinator and his Alternate: These were appointed by UBOS and MAAIF, respectively, to coordinate the effective compilation of SUA and generation of related FBS results. They managed the analysis of the FBS results, including the preparation of the report to be published, and presented it to the TWG_FBS for technical validation.

The TWG_FBS operates under the NASTC, and UBOS Executive Director and MAAIF Permanent Secretary. Through its co-chairs, it was expected to circulate any relevant information on FBS to concerned NASS stakeholders.

This TWG_FBS was formally established and their members appointed, to ensure a solid and sustainable foundation and legitimacy for the activities and the commitment of the different stakeholders.

Governance structure for FBS compilation in Uganda



2.1.4 Data Collection

Prior to the national training workshop, there was collection of some SUA/FBS basic data conducted by the members of the TWG_FBS. The data was used to feed and test the FBS Compilation Tool to ensure that it was working properly.

The TWG_FBS members dealt with the administrative data from mainly Ministries, Departments and Agencies (MDA). Each member of the team was assigned specific data to collect using structured FBS templates. Members were requested to document the data sources, used methodologies, and to identify any data gaps or inconsistencies. Also, to ensure that the process was coherent and transparent, members were requested to collaborate with all relevant key actors, including producers and users of the data.

Data collected included those on population projections, Gross Domestic Product (GDP), fisheries, crops, livestock, tourist food, imports and exports, feed ratios, seed rates, extraction rates and calorific conversion factors.

2.1.5 National Training and SUA compilation Workshops

In December 2019, UBOS organized a 5-days national training workshop on FBS compilation in Uganda. The workshop was facilitated by the AfDB International Consultant (Mr. Salou Bande) from AfDB, and attended by the national consultant, and TWG_FBS members from UBOS and MAAIF. The main objective of the workshop was to train the TWG_FBS on the new methodology for FBS compilation and on the use of the related/new FBS Compilation Tool. Some of the aspects discussed at the workshop included the following: Historical background of FBS, Definition of the Supply and Utilization Accounts (SUA) and of the FBS, Importance of FBS statistics, and Interpretation of the FBS results; Methodological framework and components of FBS; Compilation of SUA basic data; and presentation of FBS Compilation Tool. Also emphasized are the fundamental principles of FBS construction (Measurement of input data; document data and process; and feedback and collaboration among all relevant actors).

In February 2020, UBOS organized a second 5-days national workshop aimed at the compilation of SUA data and generating 2013-2018 FBS preliminary results. The workshop was also facilitated by the International Consultant from AfDB, with assistance from the National Consultant. While working in thematic groups, participants were able to compile data for all SUA components as well as generating the FBS preliminary results.

2.1.6 Generation of FBS preliminary results

The generation of FBS preliminary results starts by specifying the year of the FBS into the FBS Compilation Tool. The Tool then allows you to enter data using standard templates for each SUA component plus other required data such as GDP, population, elasticity, calorie conversion factors and nutrient factors. Then, the SUAs are balanced, standardized and aggregated, ensuring that supply is always equal to utilization. Once SUA standardization and aggregation was completed, a balanced FBS was generated by converting all commodities in their primary equivalent. After balancing the FBS, the FBS results, including DES, are generated, as shown in Annex 3.

2.1.7 Validation of FBS preliminary results

The TWG_FBS held two virtual Zoom meetings[5], chaired by the UBOS Director of Agriculture and Environment Statistics, to discuss and check the quality of the data used to generate the FBS preliminary results. These meetings aimed at vali-

[5] In the impossibility of having face-to-face meetings, due to the lockdown imposed by the COVID-19.

dating the accuracy and clarity of the data, and update/correct the data before final FBS results was generated. Also, validated were the estimation and/or imputation methodologies used. Validation helped mitigate ‘garbage-in = garbage-out” scenarios.

Some of the key elements considered were the following:

- There were crops data inconsistencies between those from the Annual Agricultural Survey (AAS) and the UBOS Statistical Abstract 2019, particularly for 2017 and 2018. The team discussed and had a consensus on which figures to consider, whether AAS or Abstract for some crops.
- The data of raw milk for cattle in 2018 was an outlier. The team decided to use historical data (2010 – 2017) to estimate the figure for 2018. It was computed by multiplying the 2017 value by the average growth rate for 2010 – 2017.
- It was noticed that whereas the FBS Tool has plantain (banana (food type and sweet type)) and banana (beer type), the banana production quantity in the Statistical Abstract was an aggregate figure. Therefore, the team used the figures in the Uganda Census of Agriculture (UCA) to generate the proportions for banana (food type), banana (beer type) and banana (sweet type).

2.2 Methodology of FBS data compilation

This section describes the actual compilation of the SUA basic data and generation of the FBS results processes. Data for each thematic group was compiled while ensuring data quality. The main sources of data were UBOS and MAAIF administrative data and reports. Missing data were estimated by the experts, based on the series of data and their knowledge of the subject. Details of data compilation for each FBS component are presented below.

2.2.1 Crops Sector

The crop production data (2010 - 2018) was obtained from mainly MAAIF and UBOS. Most of the information was in the UBOS Statistical Abstract (2019) and MAAIF administrative data sources. For every primary crop commodity, area harvested (in hectares), quantity produced (in tonnes) and yield (in tonnes per hectare) were collected. Since that in the SUAs framework the crops data has over 187 different crop commodities, data was collected for only those commodities relevant to Uganda. The commodities whose data were in other units were converted into required standard units (e.g. Kilogrames to Tonnes (1Kg=1000 tonnes), and acres to hectares (1 acre=0.405 hectares)).

The production for bananas was disaggregated into three types: (i) banana food type (93%); (ii) banana beer (6%); and (iii) banana sweet (1%), according to the proportions from the Uganda Census of Agriculture (2010). For the FBS in Uganda, bananas refer to banana sweet type, while plantains and others refers to banana food type plus banana beer type.

There were some data obtained from the Minimum Set Core of agricultural Data (MSCD file) reported by the country to AfDB and the others from FAOSTAT.

2.2.2 Livestock Sector

The livestock data was obtained from mainly the UBOS Statistical Abstract 2019, Livestock Census (2008) and the MAAIF administrative sources, while missing data were estimated. For every livestock commodity relevant for Uganda, data on number of heads, yield per carcass weight (Kilograms per head) and production (in tonnes) were collected.

For example, to estimate the raw milk for cattle, we used the Livestock Census (2008) results which indicated that 40% of all cattle in Uganda are female adults, and of which 33% are milking animals. These percentages were subjected to the total number of Cattle shown in the UBOS Statistical Abstract 2019 to generate the number of milk animals. The milk production (in tonnes) was estimated using data in the UBOS Statistical Abstract 2019, page 202, by assuming that 1 litre is equivalent to 1.03 kilograms or 0.00103 tonnes. To estimate the laying hens, we used the Livestock Census 2008 report which shows that 34% of poultry are female adults and 25% of which are laying hens. These percentages were subjected to the total poultry numbers in the UBOS Statistical Abstract 2019, page 201. The yield per carcass weight (g/head) was obtained from the FAO Technical Conversion Factors of Agricultural Commodities (TCF). To estimate the hen eggs production (in tonnes), the total eggs produced (UBOS Statistical Abstract 2019, page 202), were multiplied by 0.00005, assuming that 1 egg is equivalent to 50 grams.

The production of meat of cattle with the bone, fresh or chilled (in tonnes) is reported in the UBOS Statistical Abstract 2019, page 201. The Yield per Carcass Weight (kg/head) was obtained from the TCF file. Therefore, number of slaughtered animals was computed by dividing the production (in Kilograms) by the yield per carcass weight.

Similarly, the production of meat for pigs, sheep and goat (in tonnes) are reported in the UBOS Statistical Abstract 2019, page 201. However, meat for goat and mutton are combined in the Abstract. Considering the total goat and sheep numbers reported for 2013 – 2017 period, sheep comprise approximately 20% of the total while goats make 80%. The Yield per Carcass Weight (kg/head) for pigs, sheep and goat were obtained from the TCF file. And number of slaughtered animals (pigs, sheep and goat) was computed by dividing the production (in Kilograms) by the corresponding yield per carcass weight.

To estimate the production (in tonnes) of edible offal for cattle, pigs, sheep and goat, we multiplied the number of slaughtered animals (obtained previously) by the corresponding yield per carcass weight (g/head) (obtained from the TCF file) and then divided by 1,000,000 to get production (in tonnes).

The production (in tonnes) of fat of cattle, pigs, sheep and goat was also obtained by multiplying the number of slaughtered animals (obtained previously) by the corresponding yield per carcass weight (g/head) (obtained from the TCF file) and then divided by 1,000,000 to get production (in tonnes).

2.2.3 Import and Export data

The compilation of import and export (trade) data involved mapping Harmonized System (HS) codes to Central Product Classification (CPC) codes. However, during the period under review, three versions of HS, HS 2007, HS 2012 and HS 2017 had been used for Uganda trade statistics. The compilation process involved therefore mapping each element of the HS classification to a CPC code. The correspondence table that exists between HS versions and CPC is the one mapping HS 2012 to CPC[6] . Therefore, the codes from the 2 other versions (HS 2007 and HS 2017) should be converted first to HS 2012, before mapping it to CPC.

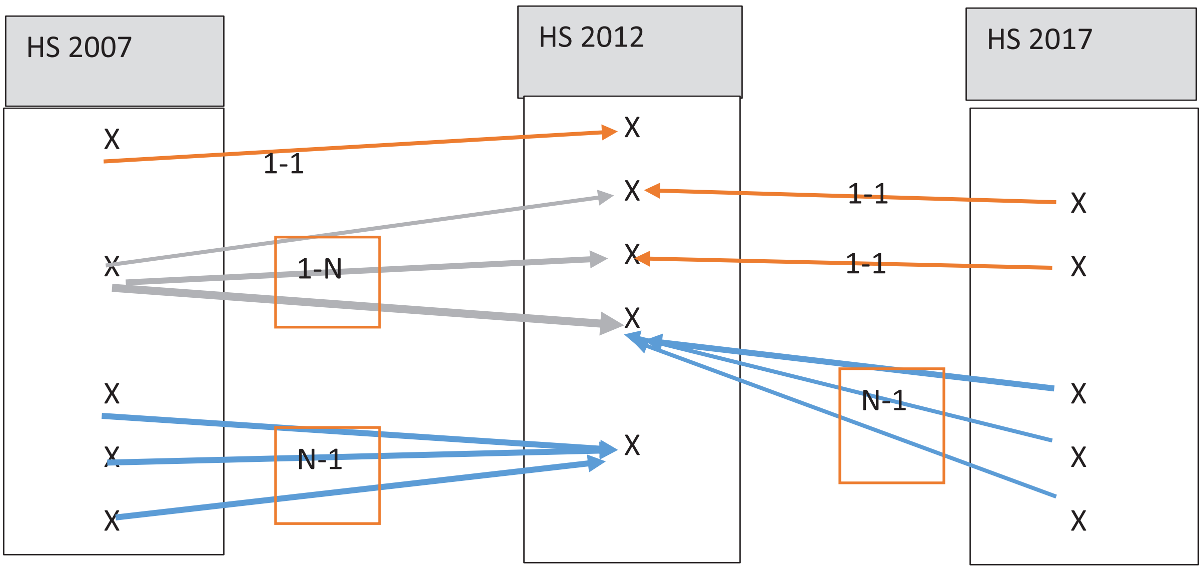
[6] https://unstats.un.org/unsd/classifications/Econ/tables/CPC/CPCv21_HS12/cpc21-hs2012.txt

Considering the three versions of HS, there are the following three types of relations to deal with:

i. One-to-One relations; where one HS 2007 code is corresponding to one HS 2012 code;
ii. Many-to-one relations; where more than HS 2007 codes are corresponding to one HS 2012 code; and
iii. One-to-Many relation; where one HS code is corresponding to more than one CPC code.

These relations are shown in the figure below: relations type (i) in orange, relations type (ii) in blue, and relations type (iii) in gray.

Relations between HS versions



The mapping of HS codes to CPC with one-to-one relations or many-to-one was done using MS Excel 'VLOOKUP' function. However, mapping HS codes with one-to-many relations required more attention. These cases have been detected in 2010 and 2011 data where HS 2007 was used and are handled as follows:

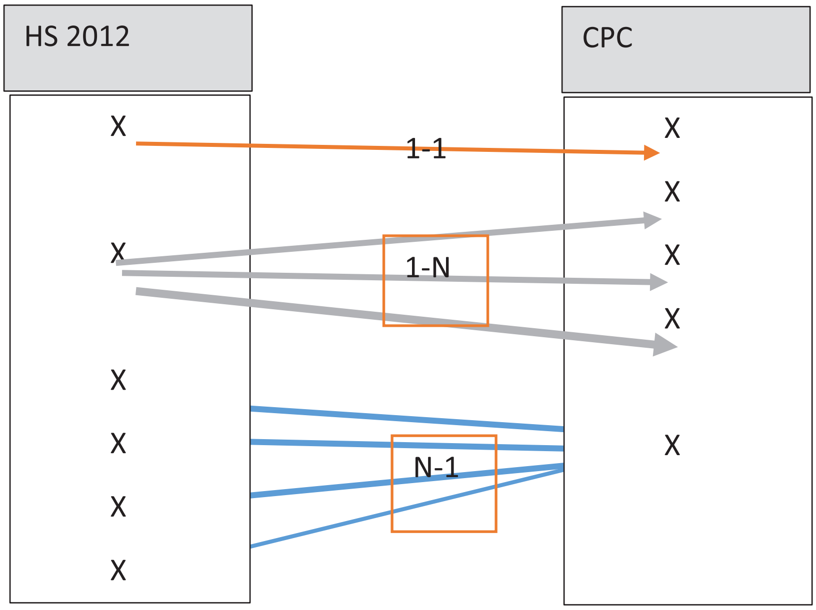
a. For each code, the average quantity was computed for the period 2012-2016 (where HS 2012 version is used);
b. The proportion was computed using the results in step (a); and
c. These proportions were considered to allocate the quantities for 2010 and 2011.

Once the mapping of HS codes (2007 and 2017) was done, the next step was to map HS 2012 codes to CPC. As shown below, here also we have three type of relations:

- One-to-One relations; where one HS 2012 code is corresponding to one CPC code;
- Many-to-one relations; where more than HS 2012 codes are corresponding to one CPC code;
- One-to-Many relations; where one HS 2012 code is corresponding to more than one CPC code

The one-to-one and many-to-one relations were handled using MS Excel 'VLOOKUP' function. When it comes to the relation one-to-many, given that the concerned commodities belong to the same and homogeneous group, one of them can be selected to receive the corresponding total of the concerned products without creating any possible bias.

Relations between HS 2012 and CPC



Note: The same logic is applied to Imports, Exports and re-exports data. These data were originally obtained by UBOS from the Uganda Revenue Authority, which is mandated to collect official data on both import and export of goods via customs declaration.

2.2.4 Stock variation

There were no data for stock variations in Uganda, so the FBS Tool is used to impute the stock changes. The guidelines for the compilation of FBS indicate that changes in stock positions tend to be correlated with changes in domestic supply (that is, production plus imports, minus exports). As such, changes in stocks can be mathematically modeled as a function of changes in internal supply.

The function is written as follow:

$$\Delta \boldsymbol{Stocks_t} = \boldsymbol{f}\,(\Delta \boldsymbol{Supply_t}) + \boldsymbol{\varepsilon_t}$$

Where:

- $\Delta Stocks_t$ is equivalent to $Stocks_t$-$Stocks_{t-1}$,
- $\Delta Supply_t$ is equivalent to [Production+Imports-Exports]$_t$- [Production+Imports-Exports]$_{t-1}$, and
- ε_t is an error term.

2.2.5 Feeds

The feeds data was computed as net trade (Production + Imports - Exports) multiplied by feed ratio. The feed ratios are obtained from SUA file for Uganda developed by FAO. The main commodities for feed were maize, millet and sorghum.

There were some efforts to obtain data on soya beans and sunflower from local feed processors, but at the end we were not able to get them.

2.2.6 Seeds

The seeds data (in tonnes) was computed by multiplying area harvested (hectares) by the seed rates (Kg/ha). The area harvested for each seed commodity is the same as in the primary commodity data (i.e. Crops data). The seed rates were recommended by the National Agricultural Research Organization (NARO), as showed in Table 10 below.

Table 10: Seed rates, as recommended by NARO

CPC CODE	COMMODITY	NARO Recommended seed rates
0111	Wheat	125.0
0112	Maize (corn)	25.0
0113	Paddy Rice	40.0
0114	Sorghum	15.0
0115	Barley	125.0
0117	Oats	125.0
0118	Millet	10.0
0141	Soya beans	62.5
0142	Groundnuts	70.0
0143	Cottonseed	20.0
01444	Sesame seed	12.5
01445	Sunflower seed	25.0
01510	Potatoes	900.0
01540	Yams	400.0
01701	Beans, dry	80.0
01703	Chick peas, dry	25.0
01706	Cow peas, dry	25.0
01707	Pigeon peas, dry	20.0

2.2.7 Loss

The loss data was estimated as total supply (Production + Imports - Δstocks) multiplied by loss ratios (% of supply). It is only for eggs that loss was estimated as loss ratio multiplied by production. The loss ratios are obtained from the TCF file, as shown in Table 11.

Table 11: Loss ratios for selected commodities

Commodity	Loss ratio (%)
Wheat	3.0
Maize	8.2
Rice	5.0
Flour of Maize	3.0
Millet	10.0
Sorghum	15.0
Potatoes	20.0
Cassava, fresh	20.0
Sweet potatoes	15.0
Beans, dry	10.0
Peas, dry	10.0
Chick peas, dry	10.0
Cow peas, dry	10.0
Pigeon peas, dry	10.0
Sugar cane	4.4
Soya beans	10.0
Groundnuts	15.0
Sesame seed	5.0
Tomatoes	10.0
Onions and shallots	10.0
Other vegetables, fresh	10.0
Bananas	15.0
Plantains and others	11.0
Other fruits n.e.c.	10.0
Cider and other fermented Stimulants	14.0
Hen eggs in shell, fresh	15.0
Raw milk of cattle	5.0

2.2.8 Tourist Food

The tourist data (Number of incoming tourists, number of outgoing tourist) are obtained from UBOS. The net Tourist consumption has been estimated by the Tool as food available for consumption by incoming visitors minus food that would have been consumed by residents who have travelled to other countries.

2.2.9 Food Processing

This was aimed at establishing the quantities of a commodity that enter into some manufacturing process for the production of a derived food product. Food processing quantities are linked to the production of derived commodities through extraction rates.

For a given commodity, first establish the imbalance (Production + Imports – Exports – Loss – Feed – Seed – Δstocks), and the processing share (percentage) dedicated for processing derived product(s). The production estimate of derived products is computed by applying the extraction rate on the processed quantity.

For example, for wheat, 100% of it is processed (so food is zero) into wheat flour and bran of wheat. For the year 2010, the imbalance of wheat was 373,663.5 tonnes, with an extraction rate of 75%, then the quantity of wheat flour produced is 373,663.5 x 0.75= 280,247.5 tonnes. And the quantity of bran of wheat would be 373,663.5 x 0.25= 93,415.86 tonnes.

Furthermore, wheat flour is processed into pasta, bread, and pastry. The processing proportion for wheat flour is 5.05%, with pasta, bread, and pastry having processing shares of 10%, 10% and 80%, respectively, and extraction rates of 1.00, 1.20, and 1.00, respectively. To establish the production quantities of pasta, bread, and pastry, first establish the imbalance of wheat flour.

Wheat flour imbalance = 280,247.5 + 3637.739 - 337.68 - 0 - 0 - 0 - 0 = 283,547.7 tonnes.

Processed wheat flour = 283,547.7 * 5.05/100 = 14,316.21 tonnes. Then apply the processing share and extraction rate for each derived product;

Pasta: 14,316.21 * 10/100 * 1.00 = 1,431.621 tonnes
Bread: 14,316.21 * 10/100 * 1.20 = 1,717.945 tonnes
Pastry: 14,316.21 * 80/100 * 1.00 = 11,452.970 tonnes

This process was done for all food commodities entering into some manufacturing process for the production of derived food products such as rice, maize, millet, sorghum, potatoes, cassava, sugar cane, soya beans, ground nuts, sunflower, etc. This is facilitated by carefully analyzing and using the related commodity trees.

It should be noted that for Uganda, the extraction rate of millet flour and sorghum flour is 1.00, while bran of millet and bran of sorghum is 0.

2.2.10 Food

The food availability for 2010-2013 was computed as a residual component that balances the equation supply=utilization. For each commodity, food is computed as the imbalance (Production + Imports – Exports – Loss – Feed – Seed – Δstocks) less the processed quantity.

From 2014 – 2018, food availability was estimated based on availability levels in the previous years, but by making adjustments for changes in income, population and the elasticity of the commodities. Since there were no country level data, the elasticity figures were obtained from United States Department of Agriculture (USDA)[7].

[7] https://www.ers.usda.gov/webdocs/DataFiles/82216/Table5.xls?v=7290.7.

The following semi-log equation is used to estimate food availability;

$$Food_t = \frac{Population_t}{Population_{t-1}} * Food_{t-1} * [1 + \in * log\left(\frac{GDP_t}{GDP_{t-1}}\right) + \emptyset]$$

Where:

Food t	is Food availability in the current year t
Food t-1	is the food availability in the previous year t-1
Population t	is population in year t
Population t-1	is population in year t-1
Ø	is growth rate in food consumption, and
є	is income elasticity of the commodity.

2.2.11 Fisheries Sector

The FBS Compilation Tool does not have a module to capture fisheries data, so it was generated using basic Microsoft Excel. The fish production data was obtained from MAAIF, while the fish import and export data (both formal and informal) was provided by Uganda Revenue Authority, through UBOS.

The fish imports data had the harmonized system classification (HS6) code, name of commodity, quantity imported (in tonnes), country of origin, and year of import. The fish exports data had the harmonized system classification (HS6) code, name of commodity, quantity imported (in tonnes), country of export, and year of export.

Firstly, each fish commodity has to be grouped by source of origin (fresh water or marine water). Fresh water fish are those that spend some or all their time in fresh water such as rivers and lakes with a salinity of less than 1.05%. Marine fish also called saltwater fish are fish that live in ocean water.

Using the Microsoft Excel Pivot Tables, a summary table of fish commodity imports and exports grouped as fresh water or marine water for 2013-2018 was developed as shown in Table 12. However, marine fish was insignificant compared to freshwater fish, thus we assumed all data as freshwater fish and all fish from Informal Cross Border Trade (ICBT) were assumed to be fresh water fish products. And since we did not have processed data for fish, all data was considered as a primary product.

Table 12: Fish data in tonnes (2013-2018)

	2013	2014	2015	2016	2017	2018
Production						
Fresh	517,311	572,759	571,860	587,868	618,853	651,523
Marine	-	-	-	-	-	-
Imports						
Fresh	593	1,063	1,738	1,836	4,753	7,398
Marine	222	13	11	6	203	129
Exports						
Fresh	32,309	29,024	34,729	35,468	31,804	38,865
Marine	9	2	1	8	74	24
Feed						
Fresh	117,688	130,303	130,098	133,740	140,789	148,221
Marine	-	-	-	-	-	-
Loss						
Loss ratio	5	5	6	5	4	4
Fresh	24,831	27,492	34,312	29,981	26,611	24,758
Marine	-	-	-	-	-	-
Food						
Fresh	343,289	387,014	374,470	390,514	424,531	447,182

In Uganda, it is only silver fish which is used for feed purposes. Data from MAAIF indicate that silver fish is 65% of all fish produced in Uganda, and that 35% of it goes to processing feeds. By applying these percentages on production quantities, the feed quantities 2010 – 2018 were generated, as shown in Table 12.

With regard to loss, the MAAIF – CAADP report (2019) has estimates of fish loss ratios for 2015 – 2018). Their average (4.8%) was used for the previous year 2013 and 2014. These loss ratios were multiplied by the production capacities for 2010 – 2018 to get the fish loss quantities (in tonnes) as shown in Table 12.

The fish commodity quantities that go as food are computed as; Production + Imports – Exports – Feed – Loss, as shown in Table 12.

In order to establish daily per capita energy, proteins and fats supply from fish and its products, we subjected the daily per capita food supplies to the nutritive factors (calorific value, proteins and fats) for fresh and marine fish commodities, as well as the population estimates of the reference period, and the results are shown in Table 13.

Table 13: Daily per capita energy, proteins and fats supply from fresh fish

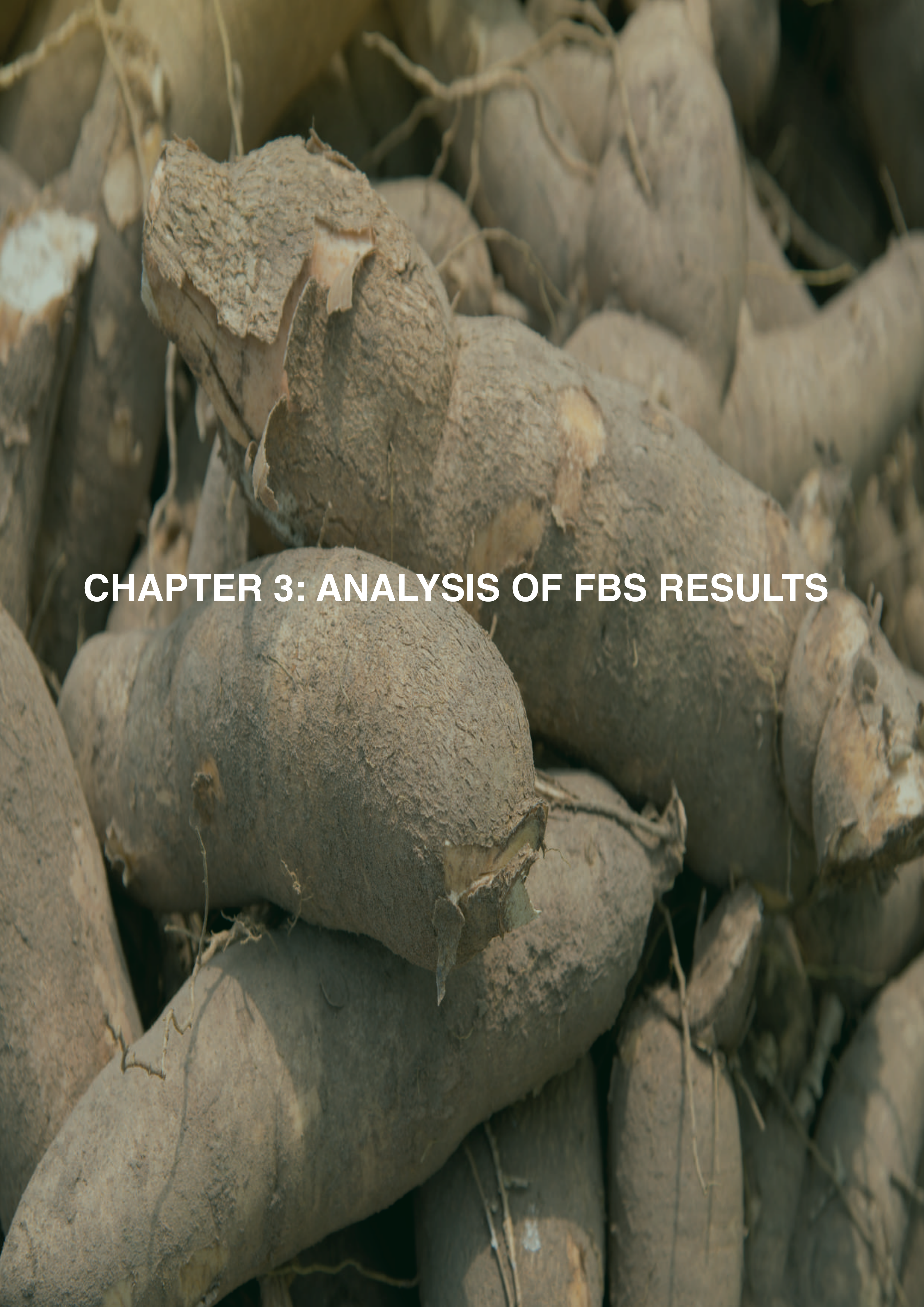
Nutritive supply from fish	2013	2014	2015	2016	2017	2018
Kcal/per capita/day	19.4	21.3	20.0	20.3	21.4	22.0
Proteins/100g	3.1	3.4	3.2	3.2	3.4	3.5
Fats/100g	0.7	0.8	0.7	0.7	0.8	0.8

For example, to compute the calorific value, proteins and fats per capita per day for 2013, the following formula was applied:

$$\text{Kcal/per capita/day} = \frac{\frac{343{,}289 \, x \, 1{,}000{,}000}{38{,}423{,}000}}{365} \times \frac{69}{100} = 19.4$$

$$\text{Proteins/per capita/day} = \frac{\frac{343{,}289 \, x \, 1{,}000{,}000}{38{,}423{,}000}}{365} \times \frac{10.9}{100} = 3.1$$

$$\text{Fats/per capita/day} = \frac{\frac{343{,}289 \, x \, 1{,}000{,}000}{38{,}423{,}000}}{365} \times \frac{2.5}{100} = 0.7$$



CHAPTER 3: ANALYSIS OF FBS RESULTS

This chapter presents an analysis of the FBS results. It provides the average of food available for human consumption for an individual in a year. Also discussed is the nutrient contents for the population, expressed as per capita energy, proteins, and fats. The per capita food supplies are important in projecting food demand and establishing relationships with food supply and prevalence of malnutrition. A comparison of quantities of food available for consumption with domestically produced food or that imported will indicate the extent to which Uganda is self-sufficient or depends on imports to feed itself.

Also presented is analysis of the Food Loss Index used to measure and monitor food losses along the food supply system in order to improve efficiency against food losses, and estimation of the Prevalence of Undernourishment. Finally, the chapter closes by comparing the Uganda results with the FAOSTAT data for Uganda, for validation purposes. Detailed FBS results are in Annex 3.

3.1 Food Supply per capita per year (Kg)

The FBS results provide information on food supplies available for human consumption. This information is used to estimate the average amount of food an individual consumes in a year. Data on per capita food supplies are important for projecting food demand in the population.

With regard to vegetal products, Table 14 shows that food availability from starchy roots was estimated at an annual per capita averaging 120.7Kg for the period under review 2013-2018. The fruits were at 103.2Kg, Cereals at 77.8Kg and alcohol at 70.7Kg.

Table 14: Contribution of Group of vegetal products in terms of Food supply per capita per year (Kg)

Group of vegetal products	2013	2014	2015	2016	2017	2018	Average
Cereals & Prod. Excl Beer	79.1	79.6	79.1	73.7	79.8	75.7	77.8
Starchy Roots & Products	130.5	125.2	125.1	121.2	121.0	100.9	120.7
Sugar crops (Excl. Prod.)	4.4	5.0	4.6	4.7	4.6	4.5	4.6
Sweeteners	18.8	16.1	18.2	16.6	18.6	17.6	17.7
Pulses& Products	24.2	27.0	23.1	18.6	19.3	18.1	21.7
Oilcrops (Excl. Prod.)	13.5	13.6	12.8	12.7	12.6	12.5	13.0
Vegetable Oils & Prod.	9.2	11.0	10.5	11.4	11.9	11.8	11.0
Vegetable & Products	10.0	10.1	10.3	10.2	10.1	10.3	10.2
Fruits &Prod. (Excl. Wine)	121.4	122.5	121.1	86.0	85.8	82.5	103.2
Stimulant Crops	0.8	0.6	0.8	0.9	0.8	1.5	0.9
Alcohol (Incl Beer&Wine)	74.8	80.2	73.1	72.9	63.0	60.3	70.7

There was a decline in starchy roots food availability since 2013 at 130.5 Kg to 100.9 Kg in 2018 as showed in Table 14. This could be attributed to the reduction of the production of sweet potatoes and the increase in the export of cassava over the period under review (2013-2018). In fact, the production of sweet potatoes decreased by 41%, from 1,987,000 tonnes in 2013 to 1,160,000 tonnes to 2018. Regarding cassava, the exports increased by almost 300%, from 5,820 tonnes in 2013 to 23,039 tonnes in 2018.

Similarly, the food availability from cereal products dropped in 2016 and 2018. The decrease in the availability per capita per year for cereals in 2016 was mainly due to the drop of the production of maize (-11%) from 2,812,919 tonnes in 2015 to 2,482,795 in 2016. Also, the year 2018 recorded a decrease in per capita per year for cereals mainly because of the drop of millet production (-9%) from 410,577 in 2017 to 371,577 in 2018, and the increase in the exports of both maize and sorghum of 33% and 39 % respectively from 2017 to 2018.

Table 15: Contribution of Cereals, Starchy roots and Fruits commodities in terms of food supply per capita per year (Kg)

Selected Vegetal products	2013	2014	2015	2016	2017	2018	Average
Cereals	79.1	79.6	79.1	73.7	79.8	75.7	77.8
Wheat & Products	11.6	13.9	12.5	14.6	17.2	16.0	14.3
Barley & Products	0.5	0.4	0.4	0.3	0.6	0.8	0.5
Maize & Products	53.9	49.7	51.0	43.0	46.3	45.0	48.2
Millet& Products	4.6	5.5	5.0	4.7	2.8	4.1	4.5
Sorghum & Products	2.6	3.8	3.5	3.5	2.9	2.6	3.2
Rice & Products	5.9	6.4	6.7	7.5	10.0	7.1	7.3
Starchy Roots	130.5	125.2	125.1	121.2	121.0	100.9	120.7
Potatoes & Products	4.9	5.0	4.1	4.0	4.2	3.9	4.4
Cassava & Products	76.3	71.7	68.8	68.8	68.3	68.3	70.4
Sweet Potatoes	49.3	48.5	52.2	48.5	48.5	28.8	45.9
Fruits	121.3	122.3	121.0	86.0	85.8	82.4	103.1
Banana	1.0	1.1	1.0	0.7	0.7	0.7	0.9
Plantains	120.2	121.2	119.9	85.1	84.9	81.6	102.2
Apples & Products	0.1	0.1	0.1	0.1	0.1	0.1	0.1

Plantains was with an average of 102.2 Kg per capita per year in food availability, (as shown in Table 15). This refers to bananas for food (matooke, a very popular consumed product in Uganda) and bananas for beer (beverage). However, the availability for consumption of plantains has been declining since 2014 at 121.2 Kg to 81.6 Kg in 2018, mainly due to decreased production of 24.6%, from 4,535,602 tonnes in 2014 to 3,420,447 tonnes in 2018.

Table 16: Contribution of animal products in terms of food supply per capita per year (Kg)

Animal products	2013	2014	2015	2016	2017	2018	Average
Meat & Products	9.4	9.4	9.4	9.5	9.2	9.2	9.3
Offals Edible	1.9	1.9	1.9	1.9	1.8	1.8	1.9
Animal Fats & Products	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Milk & Products	43.2	43.2	41.8	40.8	38.9	39.4	41.2
Eggs & Products	1.1	1.1	1.1	1.0	1.0	1.1	1.1
Fish & Products	10.4	11.4	10.7	10.7	11.3	11.6	11.0

Table 16 shows that Uganda's average per capita annual milk availability for human consumption was 41.2 Kg, while that fish and meat products were at 11 Kg and 9.3 Kg, respectively. The analysis of the trend shows that there was a decline in annual food availability of milk per individual from 43.2 Kg in 2014 to 39.4 Kg in in 2018, mainly due to increased exports of 1024% from 5,901 tonnes in 2014 to 66,301 tonnes in 2018, while that of milk and meat products had remained stable.

3.2 Dietary Energy Supply per Capita per day (Kcal)

Figure 11 shows the Dietary Energy Supply (DES) per capita per day for Uganda in 2013-2018. The FBS results indicate a steady decrease in Uganda's DES per capita per day since 2014 (2,368 Kcal), with a slight increase appearing in 2017 (2,203 Kcal) to 2,083 Kcal in 2018. This was mainly attributed to the decrease in the production of vegetal products, especially cereals and starchy roots and the increase in exports of the same group of commodities.

Figure 11: Dietary Energy Supply per Capita per Day (Kcal)

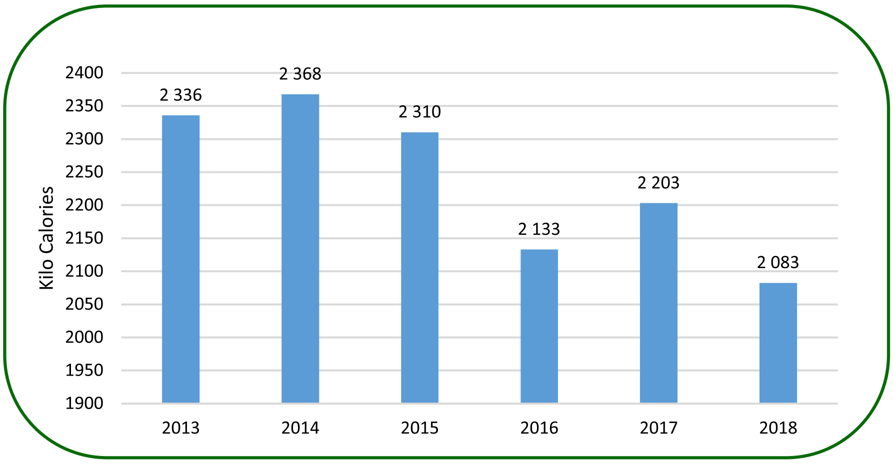


Table 17 shows the percentage contribution of vegetal products and animal products to the total DES per capita per day, from 2013-2018. The FBS results indicate that on average, the contributions from both vegetal products and animal products were stable (93% and 7%, respectively). However, the years 2016 and 2018 recorded the lowest contributions from vegetal products (92.8% in 2016 to in 2018) to Uganda's DES per capita per day. This was caused by the drop in production and increase in exports of cereals and starchy roots in 2016 and 2018.

Table 17: Contribution of Vegetal and Animal products to total DES (Kcal/cap/day)

Year	Vegetal products (Kcal)	Animal products (Kcal)
2013	2,179 (93.3%)	157 (6.7%)
2014	2,209 (93.3%)	159 (6.7%)
2015	2,155 (93.3%)	155 (6.7%)
2016	1,979 (92.8%)	154 (7.2%)
2017	2,054 (93.2%)	150 (6.8%)
2018	1,932 (92.8%)	151(7.2%)

3.2.1 DES per capita and per day from Vegetal products

The contribution to Uganda's Dietary Energy Supply per capita per day from various vegetal products is showed in Table 18. Cereals (30.2%) were the most contributors to the DES per capita per day from vegetal products, followed by starchy roots (16.4%), vegetable oils (12.7%), and fruits (12.0%).

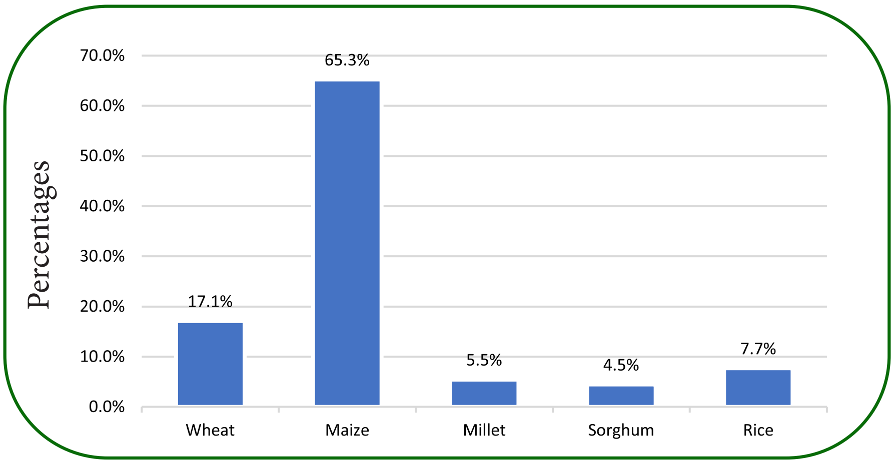
Table 18: Contribution of Groups of Vegetal Products to DES per capita per day (Kcal)

Groups of Vegetal products	2013	2014	2015	2016	2017	2018	Average	%
Cereals & Prod. Excl Beer	652	642	640	592	640	608	629.0	30.2
Starchy Roots & Products	369	353	352	342	342	289	341.2	16.4
Sugarcrops (Excl. Prod.)	3	4	4	4	4	3	3.7	0.2
Sweeteners	181	156	176	161	179	170	170.5	8.2
Pulses & Products	224	250	214	172	179	168	201.2	9.6
Treenuts & Products	0	0	0	0	0	0	0.0	0.0
Oilcrops (Excl. Prod.)	137	139	127	131	131	127	132.0	6.3
Vegetable Oils & Prod.	222	267	254	275	289	286	265.5	12.7
Vegetables & Products	10	10	11	10	10	11	10.3	0.5
Fruits &Prod. (Excl Wine)	295	298	294	209	209	200	250.8	12.0
Stimulant Crops	1	1	1	1	1	2	1.2	0.1
Spices	1	1	1	1	1	1	1.0	0.0
Alcohol (Incl Beer&Wine)	83	88	81	81	70	67	78.3	3.8
Total	**2,179**	**2,209**	**2,155**	**1,979**	**2,055**	**1,932**	**2,084.7**	**100.0**

Table 18 shows that, in the period under review, the DES per capita per day from cereals averaged 629 Kcal. However, results indicate that there was a decline since 2013 from 652 Kcal to 608 Kcal in 2018. There was a decrease in production of maize (12%), millet (18%), and sorghum (11%) between 2015 and 2016. In addition, there was increased exports of maize (76%), millet (99%) and sorghum (95%) between 2014 and 2018.

According to the FBS results, maize was the most important commodity within the cereals (Figure 12). In fact, its percentage contribution to the DES (Kcal/cap/day) from cereals was 65.3%. Wheat and rice contributed to 17.1% and 7.7%, respectively. The other types of cereals were millet and sorghum products which contributed 10% of the total calories of cereals.

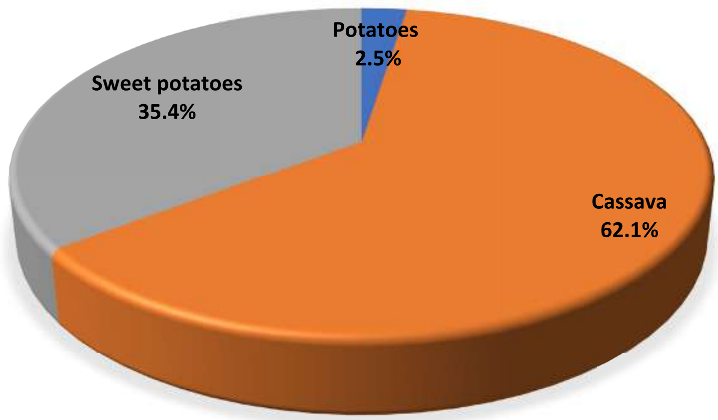
Figure 12: Contribution (%) of cereals to the total calories of Cereals products



In the period under review, cassava contributed most to DES per capita per day from the starchy roots' category, at 62.1%, followed by sweet potatoes, at 35.4%, as shown in Figure 13. Potatoes and products recorded the lowest contribution of 2.5% of calories supplied within the starchy roots' category.

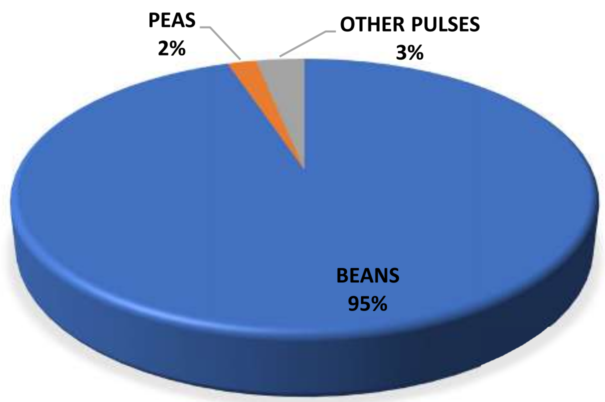
The DES per capita per day from starchy roots dropped from 369 Kcal in 2013 to 289 Kcal in 2018, because of exports for cassava, while that of sweet potatoes increased by 290% and 733% respectively between 2014 and 2018.

Figure 13: Contribution (%) of Starchy roots commodities to the total calories of Starchy roots



With regard to pulses, most of DES (Kcal/cap/day) was brought by the beans. In fact, its contribution to the total DES of the group of pulses was 95%, as shown in Figure 14.

Figure 14: Contribution (%) of pulses commodities to the total calories of pulses



The DES per capita per day for vegetable oils increased from 222 Kcal in 2013 to 286 Kcal in 2018 (See Table 18). This was mainly due to increased imports of palm oil from 226,910 tonnes in 2013 to 342,912 tonnes in 2018. Figure 15 shows that DES from palm oil constitute 73% of the total DES of vegetable oils consumed in Uganda.

Figure 15: Contribution (%) of Vegetable oil commodities to the total calories of Vegetable oils

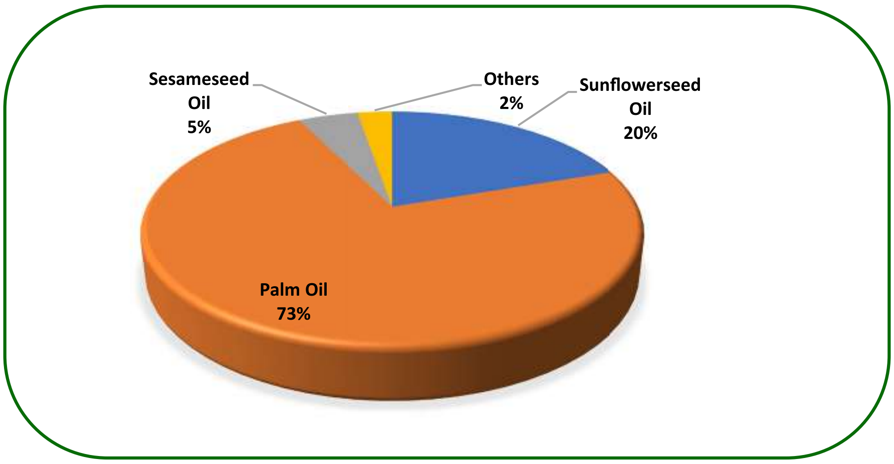


Table 19 shows that, out of all the fruits, plantain (Matooke and the one processed for beverage) was the most important fruit in Uganda, in terms of DES. Indeed, its contribution to fruits DES was 99.4% over the period 2013-2018, while banana contributed only 0.6% to the total of calories supply of the group. However, the DES per capita per day for fruits dropped from 295 Kcal in 2013 to 200 Kcal in 2018, mainly because of the decrease in calorific supply of plantains that constitute 99.3% of fruits DES. Indeed, the calorific supply of plantains reduced from 293 Kcal in 2013 to 199 Kcal in 2018, mainly because of high increased exports of plantains (958%) from 2,232 tonnes in 2013 to 23,632 tonnes in 2018.

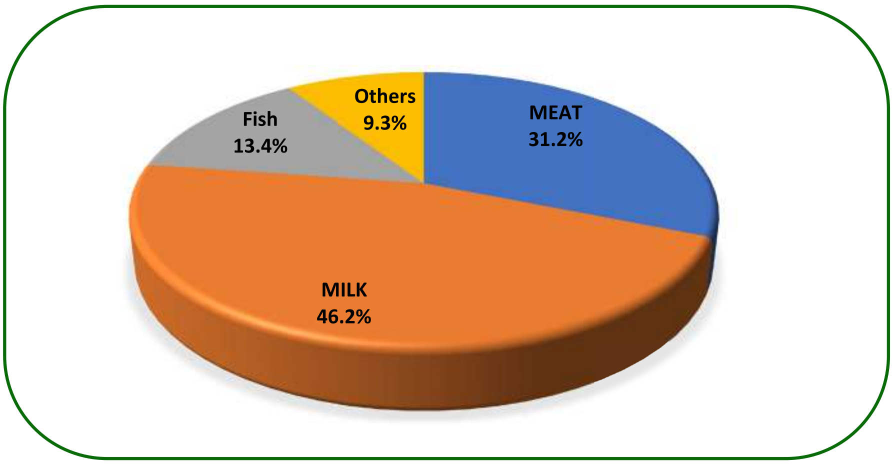
Table 19: Contribution (%) of fruits commodities to the DES (Kcal/cap/day) of fruits

Commodity	2013	2014	2015	2016	2017	2018
Plantains	99.3	99.3	99.3	99.4	99.4	99.4
Bananas	0.6	0.6	0.6	0.6	0.6	0.6
Other	0.1	0.1	0.1	0.0	0.0	0.0
Total	100.0	100.0	100.0	100.0	100.0	100.0

3.2.2 DES per capita and per day from animal products

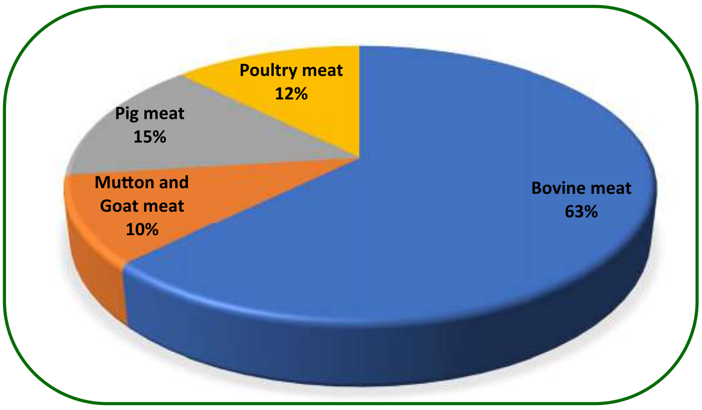
With regard to DES per capita per day from animal products, Figure 16 shows that in the period under review (2013-2018), almost half (46%) was contributed by milk, followed by meat (31%).

Figure 16: Contribution (%) of Animal commodities to the total calories (Kcal) of Animal products Group



The FBS results indicate that most of the DES per capita per day from animal products was contributed by milk (average of 71.3 Kcal) followed by meat at 48.2 Kcal. Figure 17 shows that bovine meat contributed almost two-thirds (63%) of the DES per capita per day from meat products, followed by pig meat (15%), poultry meat (12%), and mutton and goat meat (10%).

Figure 17: Contribution (%) of the different types of Meat to DES per Capita per day (Kcal) of the meat products Group



3.3 Daily Per Capita Proteins (grams)

The trends in the total daily per capita supply of proteins (grams), shown in Table 20, fluctuated between 57 grams per capita per day in 2014 and 48 grams per capita per day in 2018, with an average of 52.3 grams.

Table 20: Daily Per Capita Proteins supply (grams)

	2013	2014	2015	2016	2017	2018
Daily per capita Proteins (grams)	56	57	54	49	51	48
From Vegetal products	45	46	43	38	40	37
From Animal products	11	11	11	11	11	11

The decline in the supply of proteins from 57 grams per capita per day in 2014 to 48 grams per capita per day in 2018 was attributed to the decline in supply of proteins from vegetal products (mainly cereals) that reduced from 46 grams per capita per day in 2014 to 37 grams per capita per day in 2018.

In the period under review, the supply of proteins from animals was constant at 11 grams per capita per day.

Evidently, vegetal products were the major source of proteins in Uganda. Figure 18 shows that the bulk of the proteins was contributed by vegetal products (78.7%) equivalent to 41.5 grams, followed by animal products at 11.3 grams (21.3%).

Figure 18: Contribution (%) to total daily per capita proteins supply

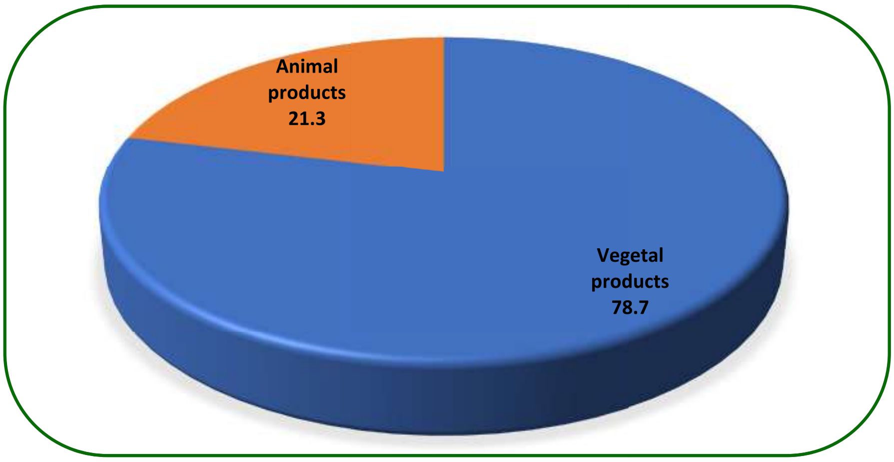


Table 21 shows the various types of vegetal products and their respective contributions to the total daily per capita proteins supply for Uganda in 2013-2018 from the group of vegetal products. In the period under review, cereals contributed an average of 37.6% to the total daily per capita proteins supply, equivalent to an average 15.7 grams, followed by pulses at 13.2 grams (31.6%). This was probably attributed to the fact that cereals (e.g. maize, wheat, millet, rice and sorghum) and pulses (e.g. beans and peas) were the most common vegetal products in the country. The other relatively important vegetal products contributing to total level of the daily per capita protein supply from vegetal products group were oil crops (13.2%) and starchy roots (9.2%).

Table 21: Contribution of Group of Vegetal products to total daily per capita proteins (grams) of vegetal products

Group of Vegetal Products	2013	2014	2015	2016	2017	2018	Average contribution	%
Cereals & products	16	16	16	15	16	15	15.7	37.6
Starchy roots & Products	4	4	4	4	4	3	3.8	9.2
Pulses & Products	15	16	14	11	12	11	13.2	31.6
Oil crops (excl. prod.)	6	6	5	5	6	5	5.5	13.2
Fruits & Prod. (excl wine)	3	3	3	2	2	2	2.5	6.0
Alcohol (incl. beer &wine)	1	1	1	1	1	1	1.0	2.4
TOTAL	45	46	43	38	41	37	41.7	100.0

Table 22 shows that maize (60.4%) and wheat (20.8%) were the main contributors to cereals proteins, while beans (100%) were the only ones accounting for pulses daily per capita proteins.

Table 22: Contribution of Cereals and Pulses products to daily per capita proteins (grams) of their respective Groups

Cereals and Pulses	2013	2014	2015	2016	2017	2018	Average contribu-tion	%
Cereals								
Wheat	3	3	3	3	4	4	3.3	20.8
Maize	11	10	10	9	9	9	9.7	60.4
Millet	1	1	1	1	1	1	1.0	6.3
Sorghum	1	1	1	1	1	1	1.0	6.3
Rice	1	1	1	1	1	1	1.0	6.3
Total	17	16	16	15	16	16	16.0	100.0
Pulses								
Beans	14	16	13	11	11	10	12.5	100.0
Peas	0	0	0	0	0	0	0.0	0.0
Pulses	0	0	0	0	0	0	0.0	0.0
Total	14	16	13	11	11	10	12.5	100.0

Table 23 shows that ground nuts contributed half (51.4%) of the daily per capita proteins from oil crops, while starchy roots, cassava (52.2%) and Sweet potatoes (47.8%) were the main contributors to the daily per capita proteins from that group.

Table 23: Contribution of Oil crops and Starchy roots products to daily per capita proteins (grams) of their respective Groups

Oils crops and Starchy roots	2013	2014	2015	2016	2017	2018	Average contribution	%
Oil Crops								
Soyabeans	1	1	1	1	1	0	0.8	14.3
Groundnuts	3	3	3	3	3	3	3.0	51.4
Sunflowerseed	1	1	1	1	1	1	1.0	17.1
Sesameseed	1	1	1	1	1	1	1.0	17.1
Total	6	6	6	6	6	5	5.8	100.0
Starchy Roots								
Potatoes	0	0	0	0	0	0	0.0	0.0
Cassava	2	2	2	2	2	2	2.0	52.2
Sweet Potatoes	2	2	2	2	2	1	1.8	47.8
Yams	0	0	0	0	0	0	0.0	0.0
Total	4	4	4	4	4	3	3.8	100.0

Table 24 shows that meat (32.0%), milk (30.6%) and fish (28.6%) were the main contributors to the daily per capita proteins from animal products.

Table 24: Contribution of Animal products to daily per capita proteins (grams) of the animal products Group

GROUP of ANIMAL PRODUCTS	2013	2014	2015	2016	2017	2018	Average contribution	%
Meat	4	4	4	4	3	3	3.7	32.0
Offals Edible	1	1	1	1	1	1	1.0	8.7
Animal Fats	0	0	0	0	0	0	0.0	0.0
Milk	4	4	4	3	3	3	3.5	30.6
Eggs	0	0	0	0	0	0	0.0	0.0
Fish	3	3	3	3	3	3	3.3	28.6
Total	12	12	12	11	10	10	11.4	100.0

3.4 Daily Per Capita Fats (grams)

Over the 2013-2018 period, the daily per capita fats supply indicated a steady increase, as shown in Table 25. The fats contents of the diet rose by 8% over this period, from 51 grams in 2013 to 55 grams in 2018.

Table 25: Daily Per Capita Fats supply (grams)

	2013	2014	2015	2016	2017	2018	Average contri-bution	%
Daily per capita Fats (grams)	51	56	53	56	56	55	54.5	100.0
Vegetal products	41	46	43	46	47	46	44.8	82.3
Animal products	10	10	10	10	9	9	9.7	17.7

Figure 19: Contribution (%) of vegetal and animal Groups of products to the total daily per capita fats supply

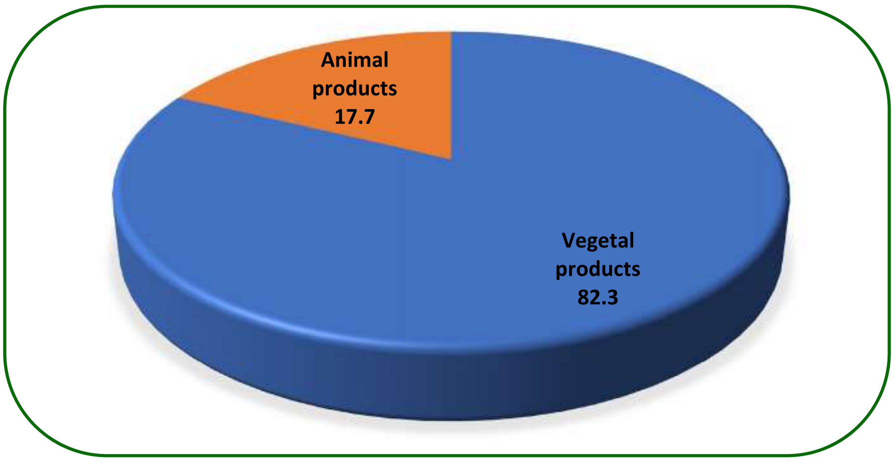


Figure 19 shows that vegetal products were the major sources of fats, accounting for 82.3%, at an average of 44.8 grams per capita per day of fats.

Examining the share of specific vegetal products to total fats supply of this group, it was observed that vegetable oils contributed most (67.4%) to the vegetal fats, followed by oil crops at 21.0%, as showed in Figure 20.

Figure 20: Contribution (%) of vegetable commodities to the daily per capita fats of vegetal products Group

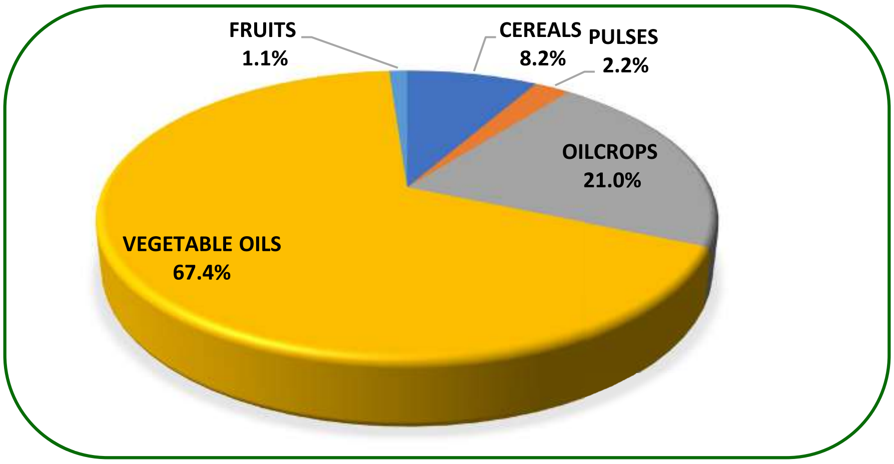


Table 26 shows that palm oil (73.9%) was the main contributor to the daily per capita fats supply from vegetal products.

Table 26: Contribution of vegetable Oils to the daily per capita fats from Vegetal products (grams)

Vegetable Oils	2013	2014	2015	2016	2017	2018	Average contri-bution	%
Groundnut Oil	1	1	0	1	1	1	0.8	2.8
Sunflower Seed Oil	6	6	6	6	6	5	5.8	19.4
Palm Oil	17	22	21	23	25	25	22.2	73.9
Sesame Seed Oil	1	1	1	2	1	1	1.2	3.9
Total	25	30	28	32	33	32	30.0	100.0

Table 27 shows that milk (41.4%) and meat (41.4%) provided majority of the animal fats in the diet. On the other hand, the contribution of animal fats (6.9%) and fish and fish products (10.3%) to fats was very low at an average of 1 gram or less per year throughout the period under review, mainly because of their low production and thus consumption.

Table 27: Contribution of Animals products to daily per capita fats supply (grams) of their respective Groups

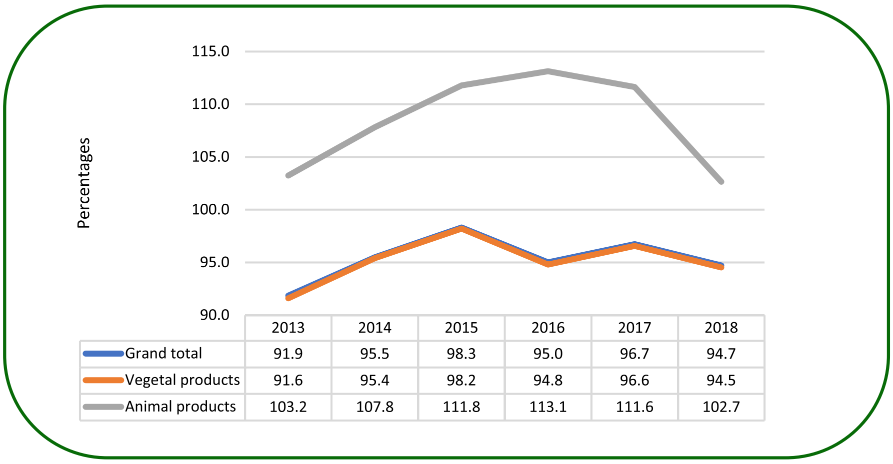
	2013	2014	2015	2016	2017	2018	Average contri-bution	%
Animal Products	10	10	10	10	9	9	9.7	100.0
Meat & Products	4	4	4	4	4	4	4.0	41.4
Animal Fats & Products	1	1	1	1	0	0	0.7	6.9
Milk and Products	4	4	4	4	4	4	4.0	41.4
Fish and Fish Products	1	1	1	1	1	1	1.0	10.3

3.5 Self Sufficiency Ratio (SSR)

As described in Chapter 1, the Self-Sufficiency Ratio (SSR) compares the magnitude of a country's agricultural production to its domestic utilization. It is the country's ability (measured as a percentage) of food produced to meet the current food demand and other related food requirements.

Figure 21 shows Uganda's Self-Sufficiency Ratio (SSR) for vegetal and animal products for the period 2013-2018. Since the vegetal products group and animal product group contain heterogenous products, the weight of such products was converted first in a standard and homogeneous unit using their caloric contents. Results show that Uganda's SSR for vegetal and animal products averaged 95.2% and 108.4% respectively. This means that for the period 2013-2018, the production of crops was not enough to bridge the supply gap, thus resorting to imports and stocks, while the production of animal products was sufficient for domestic utilization.

Figure 21: Self-sufficiency ratio for Vegetal and Animal products



For the period under review 2013-2018, vegetal products such as sugar crops, oil crops, stimulant crops, pulses and fruits were sufficiently supplied, with each having SSR that was above 100% for each year as shown in Table 28. The SSR for stimulant crops was very high averaging 963.6%. This was because of the bulk of the production of stimulant crops, particularly coffee, was exported. For example, in 2017, the production of coffee was 352,157 tonnes and the exports were 337,673 tonnes (equivalent to 96%). The imports and stock variations were not significant, which led to a small quantity for domestic supply (because the export is high). As a consequence, the production was far higher than the domestic supply and thus SSR was very high.

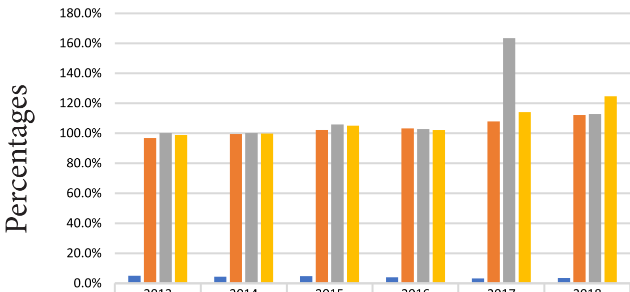
Table 28: Self Sufficiency Ratio (%) for selected Groups of Vegetal products

Group of Vegetal Products	2013	2014	2015	2016	2017	2018
Cereals &Prod. Excl Beer	87.6	87.2	90.9	86.2	88.0	92.3
Starchy Roots	100.0	99.6	99.9	100.3	100.0	100.8
Sugar crops (Excl. Prod.)	100.0	100.0	100.0	100.0	100.0	100.0
Pulses & Products	101.6	102.2	113.9	122.0	127.4	126.0
Oilcrops (Excl. Prod.)	102.8	105.1	108.9	103.5	101.5	103.6
Vegetable Oils & Prod.	33.5	28.3	27.5	26.8	25.4	24.2
Vegetables & Products	97.9	98.4	99.1	99.8	100.9	98.5
Fruits &Prod. (Excl. Wine)	100.0	101.0	100.2	100.2	100.7	100.6
Stimulant Crops	1,038.9	1,106.2	916.7	860.1	1,230.2	629.8
Spices	81.8	71.2	92.5	94.1	98.0	97.4
Alcohol (Incl Beer&Wine)	99.7	99.5	99.5	99.5	99.5	99.6

FBS results indicate that Uganda was not self-sufficient with regard to cereals, vegetables, vegetables oils, spices and alcohol as their SSR was below 100%. Vegetables oils had the lowest SSR for the entire period because of the low production of palm oil and olive oil.

With regard to cereals, Figure 22 shows that wheat recorded by far the lowest SSR, averaging 4.2% during the period 2013-2018. This was because wheat production was very low compared to the imports. In the period under review, maize recorded an increasing trend in SSR due to a steady increase in domestic production, combined with an increase of 392% in maize exports from 93,824 tonnes in 2013 to 461,622 tonnes in 2018.

Figure 22: Self-sufficiency ratio for selected cereal products



	2013	2014	2015	2016	2017	2018
WHEAT	5.0%	4.4%	4.8%	4.0%	3.3%	3.6%
MAIZE	96.7%	99.4%	102.4%	103.3%	107.9%	112.3%
MILLET	100.1%	100.1%	105.9%	102.7%	163.4%	112.9%
SORGHUM	98.9%	99.8%	105.2%	102.2%	114.1%	124.6%

Figure 22 further shows that sorghum had an increasing trend in SSR from 98.9% in 2013 to 124.6% in 2018, mainly due to increased exports. For example, sorghum exports increased from 17,712 tonnes in 2016 to 66,472 tonnes in 2017, then to 92,350 tonnes in 2018.

Millet recorded SSR that was above 100%, but the year 2017 was exceptionally high, at 163.7%. This was attributed to the increase in exports from 5,152 tonnes in 2016 to 82,270 tonnes in 2017.

The SSR for all the animal products were above 100% across the entire period of reference, as showed in Table 29. This was because domestic supply of the animal products was limited to only the production, as the imports, exports and stock variations were not significant compared to the production. For example, in 2018, whereas 217,065 tonnes of bovine meat were produced, only 24 tonnes were imported while 43 tonnes were exported.

Table 29: Self Sufficiency Ratio (%) for selected Animal products Groups

Group of Animal products	2013	2014	2015	2016	2017	2018
Meat & Products	101.7	99.9	100.1	100.0	100.1	100.0
Offals Edible	100.0	100.1	100.1	100.2	103.2	102.2
Animal Fats and Products	100.0	100.0	100.0	100.0	100.0	100.1
Milk and Products	101.8	102.0	104.1	107.7	108.7	106.5
Eggs & Products	100.0	100.0	100.2	111.1	105.0	101.7
Fish and Fish Products	106.5	105.1	106.1	106.1	104.5	105.1

3.6 Import Dependency Ratio (IDR)

The Import Dependency Ratio (IDR) for Uganda on vegetal and animal products for the period 2013-2018 is shown in Figure 23. Also, the weight of products within the vegetal products group and animal product group, was converted first in a standard and homogeneous unit using their caloric contents. The FBS results indicate that IDR for vegetal products averaged 7.3% over the period 2013-2018. This implies that about 7% of domestic supply of vegetal products came from imports. We observed an increasing trend from 3.3% in 2015 to 11.6% in 2018. The year 2018 recorded the highest IDR of 11.6% mainly because of importation of more vegetal products such as fruits, vegetables and alcohol during that year.

Except for 2015, the IDR for animal products was less than or equal to 1% throughout the whole period under review. This means that Uganda was less dependent on imported animal products.

Figure 23: Import Dependency Ratio for Vegetal and Animal products Groups

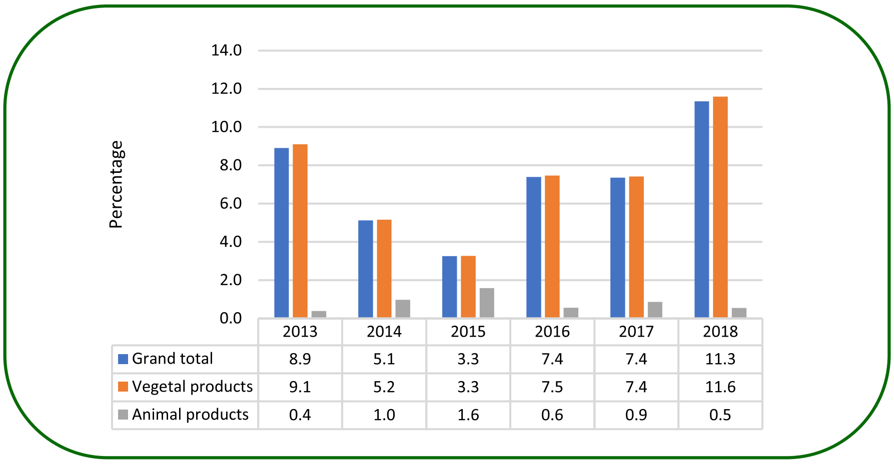


Table 30 shows the IDR for commodity groups of vegetal products that drive Uganda's IDR during the period under review. The main commodity group driving Uganda's IDR of vegetal products were nuts (352%), vegetable oils (73.8%), and spices (46.5%). The year 2016 recorded very high IDR for nuts (1600%) because 32 tonnes were imported and out of which 30 tonnes were re-exported. Similarly, vegetable oils and spices had higher import quantities than production and exports.

Table 30: Import Dependency Ratio (%) for commodity Groups of Vegetal products

Group of Vegetal products	2013	2014	2015	2016	2017	2018	Average
Cereals & Products	11.6	13.9	12.5	17.4	21.3	19.2	16.0
Starchy Roots	0.2	0.3	0.4	0.3	0.7	0.2	0.3
Sweeteners	31.7	28.9	26.9	23.1	28.5	26.4	27.6
Pulses	0.1	0.2	0.3	0.7	1.4	1.5	0.7
Treenuts	101.6	101.4	104.2	1,600.0	103.3	101.9	352.0
Oilcrops	1.5	1.1	0.4	0.8	3.6	3.7	1.9
Vegetable Oils	74.3	70.4	72.1	74.2	76.0	75.5	73.8
Vegetables	3.9	4.1	3.3	4.1	6.9	5.6	4.7
Fruits	0.1	0.1	0.2	0.2	0.2	0.3	0.2
Stimulant Crops	1.3	2.7	2.9	1.9	13.6	17.7	6.7
Spices	39.1	41.2	41.0	48.2	55.7	53.7	46.5
Alcohol	0.5	0.6	0.7	0.7	0.7	0.7	0.6

3.7 Food Loss Index (FLI)

The Sustainable Development Target 12.3 states: «By 2030, to halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses, food loss percentages by commodity and in aggregate by country". The Food Loss Index (FLI) is one of the indicators to monitor this SDG Target for a basket of key commodities in the food systems of a country. The FLI shows how much losses move from the baseline value equal to 100 in the base year. The FLI focuses on the supply stages of food chains and measures changes in percentage losses over time. The purpose of the Index is to allow for policy makers to look at the positive and negative trends in food loss compared to a baseline year, in order to improve the food supply system efficiency against food losses.

The methodology for computing the FLI has been developed by FAO and has been adapted to the case of Uganda, as detailed in Annex 1. The methodology set the base year as 2015, which is the start of the SDGs monitoring.

The FLI is computed as the ratio of the Food Loss Percentage (FLP) in the current period and the FLP in the base period multiplied by 100.

$$FLI_t = \frac{FLP_t}{FLP_{t_0}} \text{ x } 100$$

where FLP_t is the country's food loss percentage of year t. The FLI shows how much losses move from the baseline value equal to 100 in the base year.

The selection of the basket of key commodities require to follow the methodology process of first identifying the international dollar price of each of the food commodities in the base year. This is followed by compiling the value of production for every commodity, grouping the commodities by category, and ranking them to select the top two commodities per category. In fact, there are five main categories to be considered: (1) Cereals & Pulses, (2) Fruits & Vegetables, (3) Roots & Tubers and Oil-Bearing crops, (4) Animals Products, and (5) Fish and Fish Products).This selection of commodities in each of the five groups also dependent on the availability of data on loss quantities. That is why, for Uganda, the "Fish and Fish Product" group had only one selected commodity (freshwater fish), based on its production value and availability of loss and price data, and that, in order to complete the required 10 key commodities, the millet was selected as the third commodity from the cereals group. Therefore, the selected basket of 10 key commodities for Uganda was as follow:

1. Cereals & Pulses: Maize, Millet and Rice;
2. Roots & Tubers and Oil-Bearing crops: Groundnuts and Sweet potatoes;
3. Fruits & Vegetables: Tomatoes and Bananas;
4. Animals Products: Raw milk of cattle and Hen eggs; and
5. Fish and Fish Products: freshwater fish.

3.7.1 Food Loss Percentage and Food Loss Index

Table 31 shows the changes in FLP over the 2015-2018 period for the 10 key commodities.

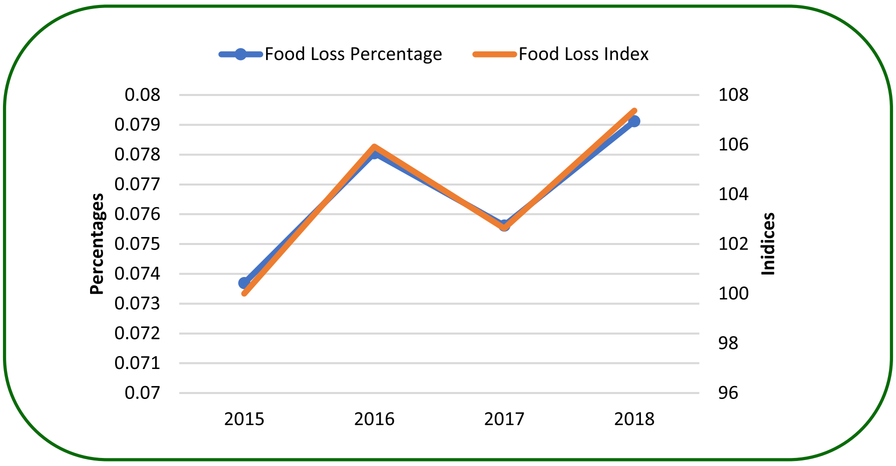
Table 31: Changes in the Food Loss Percentages

Group	Commodity	2015	2016	2017	2018
Cereals & Pulses	Maize	4.1	4.6	4.3	4.4
Cereals & Pulses	Millet	7.4	9.1	13.4	12.2
Cereals & Pulses	Rice	2.0	2.3	2.2	2.4
Roots, Tuber & Oil-bearing Crops	Groundnuts	21.4	23.1	21.4	22.2
Roots, Tuber & Oil-bearing Crops	Sweet potatoes	3.3	3.6	3.5	6.0
Fruits & Vegetables	Tomatoes	1.8	1.8	1.8	1.8
Fruits & Vegetables	Bananas	9.4	12.7	12.4	12.6
Animals Products	Raw milk of cattle	5.0	5.0	5.0	5.0
Animals Products	Hen eggs	1.4	1.3	1.4	1.4
Fish and Fish Products	freshwater	6.0	5.1	4.3	3.8
Food Loss Percentage		7.4	7.8	7.6	7.9
Food Loss Index		100.0	105.9	102.6	107.4

The FLP for Uganda, from 2015 to 2018, was estimated at an average of 7.7%, implying that 7.7% of the key commodities were lost along the supply chain and did not reach the retail stage. Actually, there was an increase of 0.54%, from 7.4% in the base year to 7.9% in 2018. This was attributed to poor post-harvest handling of the key commodities, in the last three years of the period, particularly groundnuts, bananas and millet. There were improvements in mitigating fish losses from 6.0% in 2015 to 3.8% in 2018. This could have been attributed to adequate handling and processing methods coupled with improved access to affordable electricity used to preserve the fish products.

Figure 24 shows that FLI, with 2015 as a base year, increased from 100.0 to a value of 107.4, with a drop in 2017. This means an increase of 7.4 index points. This was due to the increase in losses of especially groundnuts, sweet potatoes, and bananas, probably through poor handling practices. The drop in 2017 was largely due to a drop in percentage losses of product such as groundnuts, fish, and maize. Since all indices were above 100, Uganda would not have met the objectives of the SDG 12.3.1 if the monitoring period had fallen between 2015 and 2018.

Figure 24: Food Loss Percentage and Food Loss Index



3.7.2 Impact of food losses on food security

The increase in FLI reveals a negative impact on the food security situation in the country. Suppose the FLP and FLI in 2018 were at the same level as the base year 2015. Table 32 shows that by valuing the quantity of losses at the price from base year 2015, we incurred a loss of around $214 million if we applied the loss percentages of 2015, and around $227 million were lost when we consider the loss percentages for the year 2018, which makes a difference of $13 million. This implies that the country lost $13.3 million more, due to the increase in the FLI from 2015 to 2018. Considering the price of wheat at $145 per metric tonnes, this amount could have been used to import further about 92,000 tonnes of wheat, which would significantly have contributed to the improvement of the food security in the country.

Table 32: Analysis of the impact of food losses on food security

Commodity	Loss ratio (%) for 2015	Loss ratio (%) for 2018	Production ('000 tonnes) for 2018	Base year prices 2015	Losses ('000 tonnes) incurred due to loss percentages in 2015	Losses ('000 tonnes) incurred due to loss percentages in 2018	Value of losses ('000s USD) incurred with loss percentages from 2015 and considering the base year 2015 prices	Value of losses ('000s USD) incurred with loss percentages from 2018 and considering the base year 2015 prices
Maize	4.1	4.4	2,773	169.8	113.2	122.0	19,227	20,718
Millet	7.4	12.2	239	245.8	17.7	29.1	4,344	7,151
Rice	2.0	2.4	246	380.0	5.0	5.8	1,906	2,203
Groundnuts	21.4	22.2	193	1,946.2	41.4	43.0	80,548	83,667
Sweet potatoes	3.3	6.0	1,160	157.0	38.7	69.6	6,071	10,929
Tomatoes	1.8	1.8	39	3.3	0.7	0.7	2	2
Bananas	9.4	12.6	29	958.7	2.8	3.7	2,637	3,528
Raw milk of cattle	5.0	5.0	1,701	1,153.3	85.0	85.0	98,076	98,076
Hen eggs	1.4	1.4	47	1,666.6	0.7	0.6	1,113	1,060
Fish	6.0	3.8	652	5.3	39.0	24.5	207	130
TOTAL							214,131	227,463

3.8 Prevalence of Undernourishment

FAO defines undernourishment as a situation in which an individual is not able to acquire enough food to meet the daily minimum Dietary Energy Requirements (DER), over a period of one year; and that chronic undernourishment is synonymous with hunger. The Prevalence of Undernourishment (PoU) is an indicator that tracks the proportion of the undernourished population in a country. It is an estimate of the percentage of the total population which does not manage to get the minimum food energy requirements.

It is the probability that daily dietary energy intake (x) of an individual, taken randomly from the population reference period, is lower than the Minimum Dietary Energy Requirement (MDER) to lead a normal, healthy and active life. Hence, the formula is as follows:

$$PoU = \int_{x<MDER} f\,(x)dx$$

Where f(x) is the probability density function of daily calorie consumption per individual (Dietary Energy Consumption (DEC).

The PoU is an indicator used to measure progress towards SDG Target 2.1 which states that "By 2030, end hunger and ensure access by all people, in particular the poor and people in vulnerable situations, including infants, to safe, nutritious and sufficient food all year round".

The PoU offers countries a measure to track progress made in stamping out hunger. The methodology for calculating the PoU indicator was developed by FAO and is presented in Annex 2. It was adapted for the case of Uganda.

3.8.1 Evolution of the Minimum Dietary Energy Requirement

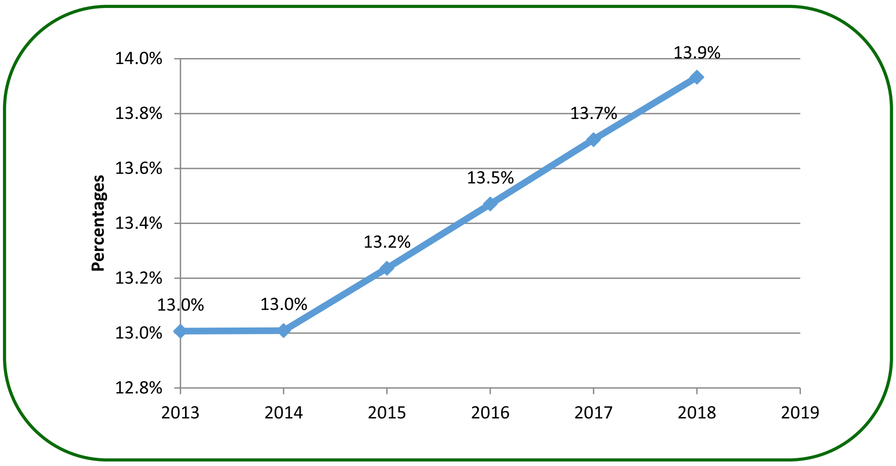
Using the FAO methodology of computing the PoU indicator, an analysis of the MDER for the period 2013-2018 in Uganda showed an increasing trend from 1854.5 Kcal per capita per day in 2013 to 1869.1 Kcal per capita per day in 2018, as shown in Table 33. The increasing trend in the MDER was attributed to the changes in Uganda's population structure, particularly for males. These data were derived by applying the algorithm for estimating the Minimum Dietary Energy Requirement developed by FAO.

Table 33: Trend of Minimum Dietary Energy Requirement (Kcal) in Uganda

Year	Male	Female	Pregnancy allowance	Total
2013	988.1	858.6	7.8	1,854.5
2014	986.8	857.2	7.8	1,851.8
2015	991.2	856.9	7.8	1,855.9
2016	995.5	857.0	7.8	1,860.3
2017	999.8	857.2	7.8	1,864.8
2018	1,003.9	857.4	7.8	1,869.1

According to the estimates generated for the period under review, the MDER was highest for males aged 15-30 years. Uganda's population structure in the period 2013-2018 indicated an increasing trend in the proportion of the population aged 15-30 years, as shown in Figure 25. The proportion of the 15-30 years age group for men in the total population increased from 13.0% in 2013 to 13.9% in 2018, which led to a commensurate increase in the DER per person per day in the population for the period 2013-2018.

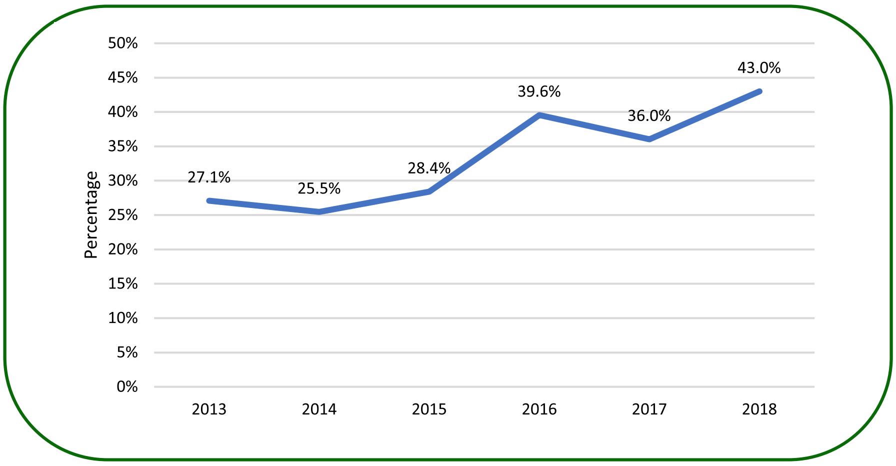
Figure 25: Proportion of the 15-30 years age Group for males in the total population



3.8.2 Evolution of the Prevalence of Undernourishment

According to Figure 26, the Prevalence of Undernourishment (PoU) for Uganda in 2018 was very high, at 43.0 %. The PoU of Uganda increased from 27.1% in 2013 to 43.0% in 2018 growing at an average annual rate of 9.5%. This was categorized as a high prevalence.

Figure 26: Prevalence of Undernourishment in Uganda (%)



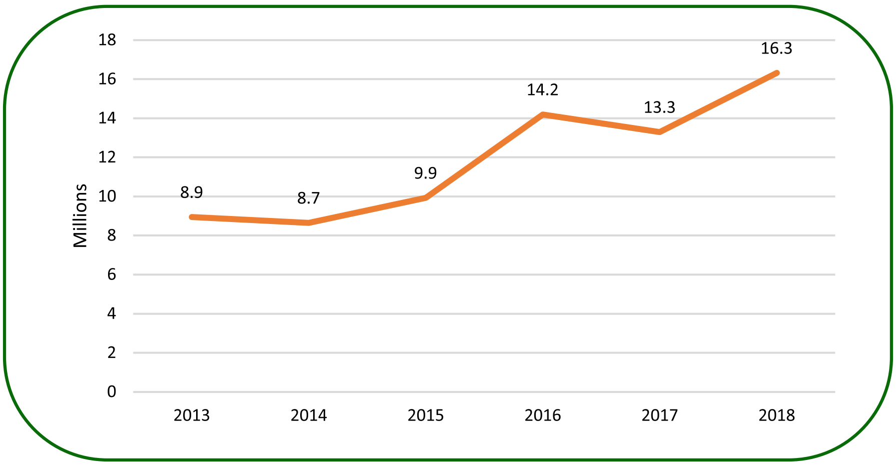
3.8.3 Evolution of the population undernourished (in millions)

The population undernourished is the product between the prevalence of undernourishment and the population of the same year:

Population undernourished = Prevalence * Population

The indicator of population undernourished displayed the same trend as the prevalence of undernourishment, as shown in Figure 27. It shows that the number of people whose food intake was insufficient to meet Dietary Energy Requirements was continuously increasing. This was related to the increase of MDER and the drop in the daily per capita calories intake for Ugandans.

Figure 27: Number of people undernourished (millions) in Uganda



3.9 Comparison of Uganda FBS results and PoU population as produced by the country with FAO data

FAO compiles and publishes annual FBS data onto FAOSTAT website, and their time series go up to 2017. Every year, it also calculates PoU numbers which are published through «The State of Food Security and Nutrition in the World". This section presents a comparison of the Uganda FBS results as produced by the country with FAOSTAT data in terms of the DES per capita per day (Kcal), daily per capita proteins supply (grams) and daily per capita fats supply (grams). It does the same for the PoU numbers as calculated by the country and FAO, respectively.

3.9.1 Comparison of Uganda and FAOSTAT FBS data

Table 34: Comparison of Uganda FBS results as calculated by the country with FAOSTAT FBS data

		2013	2014	2015	2016	2017	Average
DES per Capita per day (Kcal)	Uganda	2,336	2,368	2,310	2,133	2,203	2,254
	FAOSTAT	2,126	2,256	2,176	2,132	2,143	2,177
Daily per capita Proteins (g)	Uganda	56	57	54	49	51	53
	FAOSTAT	53	54	53	53	52	53
Daily per capita Fats (g)	Uganda	51	57	53	56	57	56
	FAOSTAT	47	49	45	44	45	46

As indicated in Table 34, Uganda's average DES per capita per day (2,254 Kcal) as calculated by the country was higher (+77Kcal) than the FAO estimate. With regard to daily per capita proteins supply, Uganda/country results were averagely same as the FAOSTAT figures. While the daily per capita fats supply was higher (+10 g) than the FAOSTAT estimate. The differences observed are explained by the data inputs used to generate these indicators. For example, as shown in Table 35, the FAO population figures were higher than those used by the country to compile the FBS. The average in terms of difference of the population between the two sources was around 3 million people. Whereas FAO used the UN population projections, the FBS compilation by the country used official/national population data from UBOS.

Table 35: Comparison of Population data with FAO

Year	Population ('000)	
	Country	FAO
2013	33,423	35,695
2014	34,393	36,912
2015	35,383	38,225
2016	36,393	39,649
2017	37,421	41,167
2018	38,469	42,729

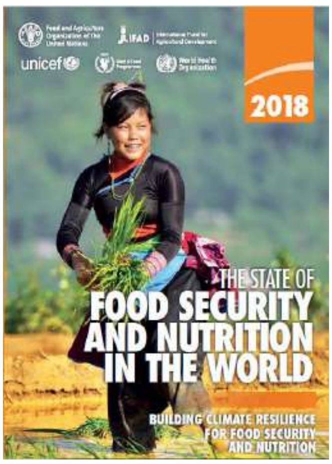
In addition to the difference in population data, we observed that the production data for some important and commonly consumed commodities were different between the two sources. The Table 36 shows the difference in terms of production data (beans dry, banana, plantain, cassava, milk) between FAOSTAT and the country.

The figures show that data from FAOSTAT were lower compared to the country/official ones with regard to banana and beans dry over the period 2013-2017. For the other commodities, we noticed an important gap between the two sources for some years such as 2015-2017 (plantain), 2015 and 2017 (cassava) and 2014 (milk).

Table 36: Comparison of production data ('000 tonnes) for some commodities with FAO

Commodity	Source	2013	2014	2015	2016	2017
Beans dry	Country	941	1,011	1,080	810	1,012
	FAOSTAT	672	674	675	660	643
	Difference (FAOSTAT-Country)	-269	-337	-405	-150	-370
Banana	Country	948	949	949	946	946
	FAOSTAT	563	557	555	547	540
	Difference (FAOSTAT-Country)	-384	-392	-394	-399	-406
Plantain	Country	4,337	4,536	4,584	3,367	3,463
	FAOSTAT	4,375	4,574	4,415	3,646	3,355
	Difference (FAOSTAT-Country)	37	39	-169	279	-108
Cassava	Country	2,980	2,813	2,727	2,729	2,729
	FAOSTAT	2,979	2,812	2,898	2,824	2,294
	Difference (FAOSTAT-Country)	-1	-1	170	95	-435
Milk	Country	1,549	1,595	1,616	1,683	1,662
	FAOSTAT	1,504	1,460	1,584	1,636	1,689
	Difference (FAOSTAT-Country)	-45	-135	-32	-47	26

3.9.2 Comparison of PoU and Undernourished population as calculated by Uganda with FAO results



According to the FAO results published in *«The State of Food Security and Nutrition in the World»*[8], the average PoU for Uganda was 37.5%, 39.7%, and 41.0% for the periods 2014-2016, 2015-2017 and 2016-2018, respectively; while the population undernourished (millions) was 15.1, 16.5, and 17.6 for the periods 2014-2016, 2015-2017 and 2016-2018, respectively, as shown in Table 37. These results were higher than the country results for the same periods. The same trend was also observed for the population undernourished.

Table 37: Comparison of Prevalence of Undernourishment and population undernourished as calculated by the country with FAO results

	2014-2016		2015-2017		2016-2018	
	Country	FAO	Country	FAO	Country	FAO
Prevalence of undernourishment (%)	31.1	37.5	34.7	39.7	39.5	41.0
Population undernourished (Millions)	10.9	15.1	12.5	16.5	14.6	17.6

The difference in the data from the two sources are attributed to the same reasons as for those observed for the aces of DES, such as the use different population estimates, among others. Table 38 indicates that, whereas the UBOS population projections were used to compute the PoU, FAO used data from *World Population Prospects*[9]. In addition, the MDER which are inputs in the PoU calculation were also different for the two sources.

[8] The links to download the reports:
http://www.fao.org/3/ca5162en/ca5162en.pdf
http://www.fao.org/3/i9553en/i9553en.pdf
http://www.fao.org/3/a-I7695e.pdf

[9] https://population.un.org/wpp/

Table 38: Comparison of country Population and MDER data with FAO ones

		Population (Millions)	Minimum dietary energy requirement
2014	Country	34	1,852
	FAO	39	1,675
2015	Country	35	1,856
	FAO	40	1,678
2016	Country	36	1,860
	FAO	42	1,681
2017	Country	37	1,865
	FAO	43	1,684
2018	Country	38	1,869
	FAO	44	1,687

3.9.3 Conclusion

In conclusion, the Uganda FBS results, as well as the resulting PuO and population undernourished are valid, as the observed differences with FAO data were due to the better quality of basic data used by the country. Therefore, a robust FBS compilation system has been established to help in better measuring and analyzing the food security situation in Uganda.

CHAPTER 4: CONSTRAINTS, LESSONS LEARNT AND RECOMMENDATIONS

4.1 Constraints

- The FBS compilation process requires data from several different sources. Most of the sources had incomplete or even lack of relevant data. In this case, the national FBS Team had to estimate and/or impute the missing data to compile the SUA/FBS.
- Lack of country level data such as, nutrient factors, Technical Conversion Factors (extraction, seed and loss rates data). The national FBS Team resorted to using TCF and nutrient factors used in FAOSTAT.
- The compilation of fishery products has not been taken into account in the FBS guidelines, and related compilation Tool. This was done separately and added to the FBS results as obtained from the Tool.
- There were data inconsistencies specifically for 2017 and 2018 between the UBOS Statistical Abstract 2019 and the newly introduced AAS. The TWG_FBS had to meet and deliberate on concerned cases.
- The COVID-19 pandemic disrupted the FBS compilation process as there was a lockdown with office business and meetings not being allowed anymore. This has affected the timely completion of the work and limited the FBS covered period to 2013-2018 as it was impossible to get the needed basic data for 2019 as well. But the TWG_FBS has arranged to meet virtually and was able to deliver quality work. The plan is underway to compile 2019 FBS as soon as possible.

4.2 Lessons learnt

- The establishment of a multi-sectoral TWG_FBS played a big role in the FBS compilation process. Each TWG_FBS member was assigned clear responsibility of compiling data for a specific component or variables of the FBS. The TWG_FBS members shared knowledge and capabilities of how to compile the needed basic data, manage inconsistencies and estimate or impute the missing data. This led to address above four first constraints and timely delivery of the needed data, and thus consistent and reliable FBS estimates were produced.
- The FBS compilation process used mainly official data from Ministries, Departments and Agencies (MDA) within the food supply chain. These MDAs have either incomplete or inconsistent or no data at all to compile the FBS. Adjustments on the data as well as estimations/imputations were carried out in most MDAs, and this provided us an opportunity to harmonize all relevant data collection processes needed for FBS compilation. Inconsistencies in FBS data led to detailed utilization and improvements in food statistics in particular, and agricultural statistics in general.
- The FBS helps to understand the nature of food security and agricultural situation in the country. Indeed, the compilation of FBS enables the estimation of nutritional requirements in terms of per capita food supplies over time which is essential for projecting food demand. It shows trends in food availability expressed in terms of energy, proteins and fats contents. It helps to assess the country level of food self-sufficiency and import dependency. The Food Loss Index and Prevalence of Undernourishment are important indicators used to monitor progress of the SDGs, and from now on, Uganda has been capacitated to produce such important indicators.

4.3 Conclusion and recommendations

The reliability of FBS results depends on the availability and accuracy of the input data, particularly production, trade, food utilization and population figures. All efforts have been made by the TWG_FBS to improve the quality of used official data, hence ensuring that the obtained FBS results reflect the true picture of the food security situation of the country.

This is the first comprehensive FBS for Uganda that complies with the international standards for compilation of FBS. A robust FBS compilation system has been set up and the TWG_FBS, trained and capacitated for its use. This lays therefore a solid and sustainable foundation for future and continuous FBS compilations. At that end, following recommendations are made:

- To further bridge the gap of missing data for compilation of FBS, it is recommended that the regular censuses (e.g. National Livestock Census) and surveys (e.g. Annual Agricultural Survey-AAS-) incorporate data requirements for the FBS, and include data for most of the food commodities required for FBS compilation. This will enable the generation of accurate and reliable country specific data that leads to quality further improvement of FBS results.
- The FBS provides a sound basis for policy analysis and decision-making needed to ensure food security. It is therefore recommended that the FBS results are compiled every year, and timely to inform the policy makers in the agriculture sector. At that end, it is strongly recommended that the TWG_FBS start working on SUA/FBS compilation for the year t once key needed basic data are made available, and that not later than June of year t+1.
- The FBS is very important tool for both the public and private sector players. It is then recommended that other stakeholders involved in the food supply chain be involved in FBS compilation process. In addition to UBOS and MAAIF, other stakeholders that can participate include manufacturing and industry players, NGOs (e.g. Eastern African Grain Council), and Farmers' associations.

ANNEXES

Annex 1: Methodology for estimating Food Loss Index

This is a brief description of the methodology on how to estimate the Food Loss Index (FLI). The details can be accessed in FAO (2018).

The FLI is a composite index for essential products in the production of a country. The aggregate index is used for national, global and international monitoring of progress accomplished for achieving the Target 3 of SDG 12. In addition, countries can calculate, if needed basic data are available, FLIs to disaggregated level, by geographic area or by agro-ecological zone, or at different links of the value chain (farms, transport, markets, processors etc.). Then the FLI of all countries can be aggregated to obtain the The Global Food Loss Index (GFLI).

The calculation of the Global Food Loss Index follows therefore following steps:

1. Choice of a base year;
2. Selection of the basket of goods and compilation of the weight of each good at the base year;
3. Estimated loss percentages for each product and Food Loss Percentage (FLP) in the country;
4. Comparison of FLPs over time and calculating the FLI;
5. Aggregation of FLIs to deduct GFLI.

Selection of the basket of goods
The selection of products is done taking into account national targets. Indeed, it is difficult to find loss estimates for all products consumed in all countries for timer the Global Index and facilitate international comparisons. Since dietary diversity and achieving food security are the key priorities targeted through the calculation of the FLI, the basket must contain a structured set of product headings covering many facets of a typical diet. These headings are the following:

(1) Cereals & Pulses, (2) Fruits & Vegetables, (3) Roots & Tubers and Oil-Bearing crops, (4) Animals Products, and (5) Fish and Fish Products). 10 products are recommended to be selected in these different headings.

The international recommendation is to constitute the 5 groups and choose two products in each group. The method of selection of products, which is internationally followed, is to rank the value of the production of the products by country and by group, and choose the two products which have the highest production value in the group. The selection process is based on the international dollar value of commodity in the base year.

At the national level, countries can use their own set of values or quantities and their prices, or use different criteria based on policies, provided that the main headings are covered. Once the basket of products is chosen, this basket remains fixed at the national/global levels to allow comparisons over time.

In addition, FAO explains that:

- The headings correspond to basic food groups and dietary needs. Each country therefore should have at least one priority product in each heading.
- Product loss levels within headings should be broadly similar, within countries, while average losses between categories will be systematically different. For example, the variation of losses in fruits is higher than those in grains, but within grains losses may be similar.

Estimated percentages of losses of each commodity and FLP

Once the basket of commodities has been chosen, the next step is to calculate loss percentages. The losses are expressed as a percentage of the total of Production + Import. The choice of percentages instead of loss values are justified by the fact that the percentages are relatively stable over time as opposed to values. For each product, the percentage of loss L_{ijt} by country (i), commodity (j) and year (t) is either estimated or observed.

These percentages can be obtained through surveys of farmers by including modules in the survey on post-harvest losses, and estimate percentages losses according to certain methodologies as proposed in the International Guidelines related to it. The Food Loss Percentage (FLP) therefore provides the average level of loss and can help countries to assess the level and extent of food losses of their country compared to others, or in an international context. It is calculated using the following formula:

$$FLP_t = \frac{\sum_j L_{jt} * (q_{jt_o} * p_{jt_o})}{\sum_j (q_{jt_o} * p_{jt_o})}$$

Where

L_{jt} = loss percentage (estimated or observed) for commodity j in year t

t_o = the base year

q_{jto} = Production plus Imports for commodity j in the base year

p_{jto} = International dollar price for commodity j in the base year.

Calculation of the Food Loss Index (FLI)

The country-level indices (FLI), are simply equal to the ratio of the Food Loss Percentage in the current period and the FLP in the base period multiplied by 100.

$$FLI_t = \frac{FLP_t}{FLP_{t_o}} \text{ x } 100$$

While that the FLP_{it} is the country's i food loss percentage in year t, The related $FLIi_t$ shows how much losses move from the baseline value equal to 100 in the base year.

Compilation of Global Food Loss Index (GFLI)

The GFLI is obtained through a weighted average of single indices calculated for all countries in the world (FLI). In order to aggregate the FLI into the GFLI or in Regional FLI, country indices are aggregated using the weighting equal to the total value of agricultural production for the year of reference. The GFLI weights reflect importance the overall value of the basket of commodities in relative international dollar terms to the rest of the World. Regarding the FLI, the weights also constitute the value of commodities in terms of the international dollar but relative to the production value of the country. The weighting is determined in the reference year.

GFLI is calculated using the following formula:

$$GFLI_t = \frac{\sum_{i=1}^{G} FLI_{it} * W_i}{\sum_{i=1}^{G} W_i} \text{ x } 100$$

Where,

W_i = total value of agricultural production of country i at international dollar prices in the base period.

FLI_{it}= is the country's Food Loss Index

Application of the FAO methodology to the case of Uganda

The computation of the Food Loss Index (FLI) for Uganda followed the methodology proposed by FAO. The required data include production (Crops and livestock, including fishery) and international commodity prices. The production data was collected from UBOS and MAAIF, while the prices were obtained from the IMF database of international prices (https://www.imf.org/en/Research/commodity-prices). The quantities of losses are those from the Food Balance Sheets results. The methodology recommends the base year of 2015 because it is the start of measurement and monitoring of the SDGs.

As recommended by the methodology, a basket of 10 key commodities were to be selected, with top two commodities in each of the five main headings (1. Cereals & Pulses, 2. Fruits & Vegetables, 3. Roots & Tubers and Oil-Bearing crops, 4. Animals Products, 5. Fish and Fish Products). The selection was according to their importance (in terms of value of production) in their respective commodity headings. However, this selection was also dependent on the availability of data on loss quantities. That is why, in the « Fish and Fish Product" group, only Freshwater fish was selected, based on its production value and availability of loss and price data; on another hand, and in order to complete the 10 key commodities, the Millet was selected as the third commodity from the cereals group (in addition to Maize & Rice). Groundnuts & Sweet potatoes, Tomatoes & Bananas, and Raw milk of cattle & Hen eggs were selected in the other three groups of Roots & Tubers & Oil-Bearing crops, Fruits & Vegetables, and Animals Products, respectively. Having the production quantity, import quantity, loss quantity and international dollar prices for each of the 10 selected commodities, the calculation of the FLI followed the FAO methodology described above.

The computation of the FLI was done using basic Microsoft Excel to produce the results which are analyzed in Section 3.8 of this report. For each year and commodity, the loss percentages were first calculated as well as their aggregation at national level; and from there, the FLI for each year was computed, with 2015 as the base year.

NB: The Global Food Loss Index is not appropriate because we are dealing with only one country.

Annex 2: Methodology for estimating Prevalence of Undernourishment

Introduction

The FAO prevalence of undernourishment (PoU) indicator monitors progress towards Millennium Development Goal target 1C of halving, between 1990 and 2015, the proportion of people suffering from hunger. Estimates of the number of undernourished (NoU) - calculated by multiplying the PoU by the size of the reference population - are used to monitor progress towards the World Food Summit goal of reducing by half the number of people suffering from undernourishment. The PoU indicator is defined as the probability that a randomly selected individual from the reference population is found to consume less than his/her calorie requirement for an active and healthy life. It is written as:

$$PoU = \int_{x<MDER} f(x)dx$$

where f(x) is the probability density function of per capita calorie consumption.

The parameters needed for the calculation of the indicator are: the mean level of dietary energy consumption (DEC); a cut-off point defined as the Minimum Dietary Energy Requirement (MDER); the coefficient of variation (CV) as a parameter accounting for inequality in food consumption; and a skewness (SK) parameter accounting for asymmetry in the distribution. The DEC as well as the MDER are updated annually, with the former calculated from the FAO Food Balance Sheets. The MDER is calculated as a weighted average of energy requirements according to sex and age class, and is updated each year from UN population ratio data. The inequality in food consumption parameters are derived from National Household Survey data when such data is available and reliable. Due to the limited number of available household surveys, the inequality in food access parameters are updated much less frequently over time than the DEC and MDER parameters.

To implement this methodology it is necessary to: (i) choose a functional form for the distribution of food consumption f(x); (ii) identify values for the three parameters, that is, for mean food consumption (DEC), its variability (CV) and its asymmetry (SK); and (iii) compute the MDER threshold. The probability density function used to infer the habitual levels of dietary energy consumption in a population, f(x), refers to a typical level of daily energy consumption during a year. As such, f(x) does not reflect the possible implications of insufficient food consumption levels that may prevail over shorter periods. Both the probability distribution f(x) and the MDER threshold are associated with a representative individual of the population, of average age, sex, stature and physical activity level.

Functional Form

The FAO methodology for the calculation of the prevalence of undernourishment uses a probability framework in which the distribution of per capita calorie consumption of the representative individual is characterized. The use of such a framework is necessary, as data typically are not available on individual food consumption and requirements, but rather for household acquisition. Starting with the estimates of undernourishment produced for the Sixth World Food Survey in 1996, the distribution was assumed to be lognormal. This model is very convenient for the purposes of analysis, but has limited flexibility, especially in capturing the skewness of the distribution.

As part of the revisions made for the 2012 edition of *The State of Food Insecurity in the World Report,* the methodology moved away from the exclusive use of the two parameters lognormal distribution to adopt the more flexible three parameter skew-normal and skew- lognormal families [3]. In the case of the lognormal distribution, the skewness can be written as function of the CV as:

SK = (CV^2+3)*CV (1)

This implies that the SK for the lognormal distribution is completely determined by the CV derived from household survey data. The flexibility gained from the additional parameter allows for independent characterization of the asymmetry of the distribution.

The skew-normal distribution can be considered a generalization of the normal distribution that can account for departures from normality to a certain degree, corresponding to skewness values within the approximate range (-0.995, 0.995). The distribution cannot be evaluated at higher levels of asymmetry, and so ways to deal with higher degrees of skewness need to be found. One solution is to consider only the restricted range of the skewed-normal distribution in the calculation of the PoU. Another solution is to add another level of flexibility in which the functional form for the distribution itself is allowed to change, based on the level of asymmetry in the data. The identification of the appropriate combination of functional forms as well as the level of asymmetry at which to change functional forms motivates the investigations below.

The simplest way to handle skewness outside of the range of the skewed-normal distribution is to place a ceiling on the SK parameter (such as 0.99) and to use this limit for higher degrees of asymmetry. The implementation of this approach (referred to as **Function 1**) – in (a) the PoU is shown as a function of the SK parameter with the other parameters fixed (DEC equal to 2000, MDER equal to 1800, and CV equal to 0.35) and in (b) the density function is shown the with the same parameters fixed but with the SK equal to zero (corresponding to the normal distribution), 0.75, and 0.99 (the ceiling). High levels of asymmetry in the data may indicate that the skew-normal distribution is not the appropriate model, and alternative criterions for the selection of the functional form are described below.

As a first alternative to the application of the skewed-normal distribution described above, consider replacing the ceiling with a new value W, and evaluating the log-normal distribution for skewness values higher than W. If we denote the PoU evaluated using the lognormal distribution as PoULN, we can write this criterion for the choice for the distribution **(Function 2)** as:

PoU = PoULN (DEC, CV, SK, MDER), SK ≥ W (2a)
PoU = PoUSN (DEC, CV, SK, MDER), SK < W (2b)

Although the two different functional forms for the distribution do allow for a wider range of levels of asymmetry to be captured, discontinuities in the PoU occur as the functional form transitions from one to the other. An intermediate distribution may help to link such a gap, and this is the motivation behind the criterion below for the choice of the functional form.

As a modification of the criterion described above, consider using the log-skewed-normal distribution[2] (denoted by PoU_{LSN}) as an intermediate between the transition of the functional form from the skewed-normal to the log-normal, as written below:

$$PoU = PoU_{LN}(DEC, CV, SK, MDER), \quad SK \geq (CV^2 + 3)CV \quad (3a)$$

$$PoU = PoU_{LSN}(DEC, CV, SK, MDER), \quad W < SK < (CV^2 + 3)CV \quad (3b)$$

$$PoU = PoU_{SN}(DEC, CV, SK, MDER), \quad (3c)$$

In the criterion written above **(Function 3)**, the skewness implied theoretically by the lognormal is used both as a floor for the application of the lognormal and as a ceiling for the application of the log-skewed-normal. The fixed switch point W is used as a floor for the application of the log-skewed-normal and as a ceiling for the application of the skewed- normal.

Estimating and projecting mean food consumption

To compute per capita DEC in a country, FAO has traditionally relied on Food Balance Sheets, which are available for more than 180 countries. This choice was due mainly to the lack, in most countries, of suitable surveys conducted regularly. Through data on production, trade and utilization of food commodities, the total amount of dietary energy available for human consumption in a country for a one-year period is derived using food composition data, allowing computation of an estimate of per capita dietary energy supply.

During the revision for *The State of Food Insecurity in the World 2012* a parameter that captures food losses during distribution at the retail level was introduced in an attempt to obtain more accurate values of per capita consumption. Region-specific calorie losses were estimated from data provided in a recent FAO study and ranged from 2 percent of the quantity distributed for dry grains, to 10 percent for perishable products such as fresh fruits and vegetables.

Estimating the MDER threshold

To calculate the MDER threshold, FAO employs normative energy requirement standards from a joint FAO/WHO/United Nations University expert consultation in 2001. These standards are obtained by calculating the needs for basic metabolism – that is, the energy expended by the human body in a state of rest – and multiplying them by a factor that takes into account physical activity, referred to as the physical activity level (PAL) index.

As individual metabolic efficiency and physical activity levels vary within population groups of the same age and sex, energy requirements are expressed as ranges for such groups. To derive the MDER threshold, the minimum of each range for adults and adolescents is specified on the basis of the distribution of ideal body weights and the mid-point of the values of the PAL index associated with a sedentary lifestyle. The lowest body weight for a given height that is compatible with good health is estimated from the fifth percentile of the distribution of body mass indices in healthy populations.

Once the minimum requirement for each sex-age group has been established, the population-level MDER threshold is obtained as a weighted average, considering the relative frequency of individuals in each group as weights. The threshold is determined with reference to light physical activity, normally associated with a sedentary lifestyle. However, this does not negate the fact that the population also includes individuals engaged in moderate and intense physical activity. It is just one way of avoiding the overestimation of food inadequacy when only food consumption levels are observed that cannot be individually matched to the varying requirements.

A frequent misconception when assessing food inadequacy based on observed food consumption data is to refer to the mid-point in the overall range of requirements as a threshold for identifying inadequate energy consumption in the population. This would lead to significantly biased estimates: even in groups composed of only well-nourished people, roughly half of these individuals will have intake levels below mean requirements, as the group will include people engaged in low physical activity. Using the mean requirement as a threshold would certainly produce an overestimate, as all adequately nourished individuals with less than average requirements would be misclassified as undernourished.

FAO updates the MDER thresholds every two years based on regular revisions of the population assessments of the United Nations Population Division and data on population heights from various sources, most notably the Monitoring and Evaluation to Assess and Use Results of Demographic and Health Surveys project coordinated by the United States Agency for International Development (USAID). This edition of *The State of Food Insecurity in the World* uses updated population estimates from the 2012 revision published by the United Nations Population Division in June 2013. When data on population heights are not available, reference is made either to data on heights from countries where similar ethnicities prevail, or to models that use partial information to estimate heights for various sex and age classes.

Application of FAO methodology to the case of Uganda

The Minimum Dietary Energy Requirements (MDER) are determined using standards established by the FAO/WHO expert group on energy needs. There is a computation developed under Microsoft Excel that automatically calculates the MDER, once the input parameters are entered. The input parameters are:

- Population projections by age group and sex, provided by UBOS
- The anthropometric data (height and weight of children under 5), as well as those of women of 15-49 years (height, Body Mass Index) are provided by the UDHS (2016).
- Body Mass Index (BMI) of men as well as women outside childbearing age group (0-14 years and over 49 years), weight gain for age, energy per kg of weight gained, and level of physical activity for age from 5 years to more than 70 years; this data was obtained from the World Health Organization (WHO).
- A combination of the above input parameters makes it possible to generate estimates for the MDER for male and female separately.
- Also required is to estimate the MDER of pregnant women in population. To do this, two other parameters were integrated into the model:
    - o The birth rate, obtained from UDHS (2016)
    - o The DER of an average pregnant woman is estimated by multiplying the birth rate by 210 kilocalories, assuming an estimated daily requirement of 280 kilocalories during pregnancy over 75 per cent of the year.
- The Coefficients of Variation (CV) linked to the consumption of the Uganda population was obtained from the FAO Food Security indicators as 0.33.
- The average Dietary Energy Consumption (DEC) per capita per year comes from the FBS detailed results. It is actually the DES per capita generated in the context of developing the Uganda FBS 2013-2018, which is used as proxy of DEC.

Following the FAO methodology, to estimate the Prevalence of Undernourishment, we assumed the distribution of the DEC within Uganda population to be log-normal.

Finally, the population undernourished for a given year in the case of Uganda was estimated by multiplying the Prevalence of Undernourishment for the year by the total population of the same year.

Annex 3: FBS detailed results (2013-2018)

FOOD BALANCE SHEET 2013	Population('000):									33 423				
	Domestic supply					Domestic Utilization						Per Capita Supply			
PRODUCTS	Production	ImportS	Exports	Stock Variation	Total Domestic Supply	Processed	Loss	Feed	Seed	Other uses	Food	Per Year Food	Calories (PER DAY)	Proteins (PER DAY)	Fats (PER DAY)
	1000 Metric Tons											Kg.	Kcal	g	g
Grand total													2336	56	51
Vegetal products.													2179	45	41
Animal products.													157	11	10
Cereals (excl beer)	3506	464	157	-190	4002	549	228	383	50	149	2644	79	652	16	4
Wheat and products	20	442	60	0	402	0	13	0	2	0	387	12	87	3	0
Barley and products	0	17	0	-1	18	0	0	0	0	0	18	1	5	0	0
Maize and products	2745	1	96	-188	2839	395	138	331	34	137	1802	54	456	11	3
Rye and products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oats and products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Millet and products	228	0	0	0	227	27	18	23	2	5	153	5	42	1	0
Sorghum and products	299	4	1	0	302	126	54	29	5	0	87	3	25	1	0
Rice and prod (milled eq.)	214	0	0	0	214	0	5	0	7	6	196	6	38	1	0
Cereals,others and products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Starchy roots and products	4959	11	9	0	4960	0	342	0	16	240	4363	131	369	4	0
Potatoes and products	176	10	0	0	186	0	5	0	16	0	165	5	10	0	0
Cassava and products	2973	0	9	0	2964	0	264	0	0	149	2551	76	230	2	0
Sweet potatoes	1810	0	0	0	1810	0	73	0	0	91	1646	49	130	2	0
Roots and tubers,oth and prod.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yams	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sugar crops	3351	0	0	0	3351	3203	2	0	0	0	146	4	3	0	0
Sugar cane	3351	0	0	0	3351	3203	2	0	0	0	146	4	3	0	0
Sugar beets	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

FOOD BALANCE SHEET 2013	Population('000):										33 423				
	Domestic supply					Domestic Utilization						Per Capita Supply			
PRODUCTS	Production	ImportS	Exports	Stock Variation	Total Domestic Supply	Processed	Loss	Feed	Seed	Other uses	Food	Per Year Food	Calories	Proteins	Fats
													PER DAY		
	1000 Metric Tons											Kg.	Kcal	g	g
Sugar & Sweeteners	443	200	11	0	632	0	0	0	0	4	627	19	181	0	0
Sugar non-centrifugal	6	0	1	0	4	0	0	0	0	0	4	0	1	0	0
Sugar and prod. (raw eq.)	437	197	10	0	625	0	0	0	0	4	621	19	180	0	0
Sweeteners, other and prod	0	3	0	0	3	0	0	0	0	0	3	0	1	0	0
Honey	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pulses	990	1	26	-10	974	0	74	0	55	37	809	24	224	15	1
Beans, dry and products	941	0	26	-10	925	0	67	0	54	37	767	23	213	14	1
Peas, dry and products	17	1	0	0	18	0	2	0	0	0	16	0	5	0	0
Pulses, other and prod.	31	0	0	0	31	0	5	0	1	0	25	1	7	0	0
Treenuts	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nuts and products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oil crops	682	10	28	0	663	114	67	0	31	0	452	14	137	6	10
Soyabeans and products	23	0	2	0	21	2	1	0	1	0	18	1	8	1	0
Groundnuts (shelled eq)	295	9	4	0	300	41	57	0	26	0	176	5	60	3	5
Sunflower seed	239	0	0	0	239	37	0	0	1	0	201	6	42	1	2
Rape and Mustard seed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Coconuts and copra	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sesame seed	124	0	22	0	102	33	10	0	2	0	58	2	27	1	2
Palmkernels	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Olives	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oilcrops others	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vegetable oils	103	228	24	0	307	0	0	0	0	0	307	9	222	0	25
Soyabean oil	3	0	1	0	2	0	0	0	0	0	2	0	1	0	0
Groundnut oil	8	0	0	0	8	0	0	0	0	0	8	0	6	0	1

FOOD BALANCE SHEET 2013	Population('000):										33 423				
	Domestic supply					Domestic Utilization						Per Capita Supply			
PRODUCTS	Production	ImportS	Exports	Stock Variation	Total Domestic Supply	Processed	Loss	Feed	Seed	Other uses	Food	Per Year Food	Calories	Proteins	Fats
													PER DAY		
	1000 Metric Tons											Kg.	Kcal	g	g
Sunflower seed oil	76	0	0	0	76	0	0	0	0	0	76	2	55	0	6
Rape and mustard oil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cottonseed oil	0	1	0	0	1	0	0	0	0	0	1	0	1	0	0
Palm kernel oil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Palm oil	0	227	23	0	204	0	0	0	0	0	204	6	148	0	17
Copra oil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sesame seed oil	16	0	0	0	16	0	0	0	0	0	16	0	11	0	1
Olive and residue oil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maize Germ Oil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oilcrops Oil, Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vegetables	335	13	6	0	342	0	7	0	0	0	335	10	10	0	0
Tomatoes and products	35	0	5	0	31	0	0	0	0	0	30	1	0	0	0
Onions, dry	297	0	0	0	297	0	7	0	0	0	290	9	9	0	0
Vegetables, other and prod	3	13	1	0	15	0	0	0	0	0	14	0	0	0	0
Fruits (excl wine)	4379	5	4	0	4381	225	97	0	0	0	4058	121	295	3	1
Orang-es,tang-mand and prod.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lemons, limes and prod.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grapefruit and products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Citrus fruit nes and prod.	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0
Banana	37	0	0	0	37	0	2	0	0	0	35	1	2	0	0
Plantains	4339	0	2	0	4337	225	95	0	0	0	4017	120	293	3	1
Apples and prod-ucts	0	3	0	0	2	0	0	0	0	0	2	0	0	0	0
Pineapples and products	3	0	1	0	2	0	0	0	0	0	2	0	0	0	0
Dates	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

FOOD BALANCE SHEET 2013	Population('000):										33 423				
PRODUCTS	Domestic supply					Domestic Utilization						Per Capita Supply			
	Production	ImportS	Exports	Stock Variation	Total Domestic Supply	Processed	Loss	Feed	Seed	Other uses	Food	Per Year Food	Calories (PER DAY)	Proteins (PER DAY)	Fats (PER DAY)
	1000 Metric Tons											Kg.	Kcal	g	g
Grapes and prod(-excl.wine)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fruit, other and products	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0
Stimulants	292	0	276	-11	28	0	0	0	0	2	26	1	1	0	0
Coffee and products	233	0	230	-10	12	0	0	0	0	0	12	0	0	0	0
Cocoa beans and products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tea	60	0	45	-1	16	0	0	0	0	2	14	0	0	0	0
Spices	2	1	1	0	3	0	0	0	0	0	3	0	1	0	0
Pepper	2	0	0	0	2	0	0	0	0	0	2	0	0	0	0
Pimento	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cloves	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Spices, other	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0
Alcoholic beverages	2494	12	5	0	2500	0	0	0	0	1	2499	75	83	1	0
Wine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Barley beer	32	0	0	0	32	0	0	0	0	0	32	1	1	0	0
Beverages, fermented	2461	0	0	0	2461	0	0	0	0	0	2461	74	81	1	0
Beverages, alcoholic	0	10	4	0	6	0	0	0	0	0	6	0	1	0	0
Alcohol, non-food	0	2	1	0	1	0	0	0	0	1	0	0	0	0	0
Meat	320	0	5	0	315	0	0	0	0	0	315	9	48	4	4
Meat and products, bovine	197	0	5	0	192	0	0	0	0	0	192	6	30	2	2
Meat and prod, sheep and goat	37	0	0	0	37	0	0	0	0	0	37	1	5	0	0
Meat and products, pig	21	0	0	0	22	0	0	0	0	0	22	1	7	0	1
Meat and products, poultry	65	0	0	0	64	0	0	0	0	0	64	2	6	1	0
Meat and prod, other anim.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Offals	64	0	0	0	64	0	0	0	0	0	64	2	6	1	0

FOOD BALANCE SHEET 2013	Population('000):										33 423				
	Domestic supply					Domestic Utilization						Per Capita Supply			
PRODUCTS	Production	ImportS	Exports	Stock Variation	Total Domestic Supply	Processed	Loss	Feed	Seed	Other uses	Food	Per Year Food	Calories	Proteins	Fats
													PER DAY		
	1000 Metric Tons											Kg.	Kcal	g	g
Offals, edible	64	0	0	0	64	0	0	0	0	0	64	2	6	1	0
Animal fats	7	0	0	0	7	0	0	0	0	0	7	0	5	0	1
Fats, animals, raw	7	0	0	0	7	0	0	0	0	0	7	0	5	0	1
Butter, ghee	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cream	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Milk	1549	7	35	0	1521	0	78	0	0	0	1443	43	75	4	4
Milk and prod (excl butter)	1549	7	35	0	1521	0	78	0	0	0	1443	43	75	4	4
Eggs	42	0	0	0	42	0	1	0	4	0	37	1	4	0	0
Eggs and products	42	0	0	0	42	0	1	0	4	0	37	1	4	0	0
Fish and sea food	517	1	32	0	486	0	25	118	0	0	343	10	19	3	1
Fish	517	1	32	0	486	0	25	118	0	0	343	10	19	3	1
Miscellaneous	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Infant food	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Miscellaneous	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

FOOD BALANCE SHEET 2014	Population(‘000): 34 393														
	Domestic supply					Domestic Utilization						Per Capita Supply			
PRODUCTS	Production	ImportS	Exports	Stock Variation	Total Domestic Supply	Processed	Loss	Feed	Seed	Other uses	Food	Per Year Food	Calories	Proteins	Fats
													PER DAY		
	1000 Metric Tons											Kg.	Kcal	g	g
Grand total													2368	57	56
Vegetal products.													2209	46	46
Animal products.													159	11	10
Cereals (excl beer)	3441	549	171	-128	3947	500	190	330	46	144	2738	80	642	16	4
Wheat and products	22	528	52	0	499	0	16	0	2	4	477	14	104	3	1
Barley and products	0	14	1	0	14	0	0	0	0	1	13	0	3	0	0
Maize and products	2646	1	113	-128	2661	365	124	296	32	134	1710	50	421	10	2
Rye and products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oats and products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Millet and products	237	0	0	0	237	19	12	16	1	0	187	5	40	1	0
Sorghum and products	299	5	4	0	300	115	33	17	3	0	131	4	33	1	0
Rice and prod (milled eq.)	237	1	0	0	238	0	5	0	7	6	220	6	41	1	0
Cereals,others and products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Starchy roots and products	4810	14	7	-12	4829	0	284	0	16	223	4305	125	353	4	0
Potatoes and products	181	13	1	0	193	0	5	0	16	0	172	5	10	0	0
Cassava and products	2810	1	6	-12	2818	0	211	0	0	141	2466	72	216	2	0
Sweet potatoes	1818	0	0	0	1818	0	68	0	0	82	1667	48	128	2	0
Roots and tubers,oth and prod.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yams	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sugar crops	3416	0	0	0	3416	3241	2	0	0	0	173	5	4	0	0
Sugar cane	3416	0	0	0	3416	3241	2	0	0	0	173	5	4	0	0
Sugar beets	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sugar & Sweeteners	440	160	45	0	555	0	0	0	0	1	554	16	156	0	0

FOOD BALANCE SHEET 2014	Population('000): 34 393														
	Domestic supply					Domestic Utilization						Per Capita Supply			
PRODUCTS	Production	ImportS	Exports	Stock Variation	Total Domestic Supply	Processed	Loss	Feed	Seed	Other uses	Food	Per Year Food	Calories	Proteins	Fats
													PER DAY		
	1000 Metric Tons											Kg.	Kcal	g	g
Sugar non-centrifugal	3	0	1	0	2	0	0	0	0	0	2	0	0	0	0
Sugar and prod. (raw eq.)	437	159	43	0	553	0	0	0	0	1	552	16	156	0	0
Sweeteners, other and prod	0	2	1	0	0	0	0	0	0	0	0	0	0	0	0
Honey	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pulses	1059	2	34	-10	1037	0	63	0	46	0	928	27	250	16	1
Beans, dry and products	1012	0	34	-10	988	0	58	0	45	0	885	26	238	16	1
Peas, dry and products	16	1	0	0	16	0	2	0	0	0	15	0	4	0	0
Pulses, other and prod.	31	1	0	0	32	0	4	0	1	0	28	1	8	0	0
Treenuts	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nuts and products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oil crops	712	7	42	0	678	114	66	0	30	0	468	14	139	6	10
Soyabeans and products	28	1	2	0	27	3	1	0	0	0	22	1	10	1	0
Groundnuts (shelled eq)	296	6	1	0	301	40	56	0	26	0	178	5	59	3	5
Sunflower seed	244	0	0	0	244	38	0	0	1	0	205	6	41	1	2
Rape and Mustard seed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Coconuts and copra	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sesame seed	145	0	39	0	106	32	9	0	2	0	62	2	28	1	2
Palmkernels	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Olives	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oilcrops others	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vegetable oils	108	268	10	-15	380	0	0	0	0	1	379	11	267	0	30
Soyabean oil	4	0	0	0	4	0	0	0	0	0	4	0	3	0	0
Groundnut oil	8	0	0	0	8	0	0	0	0	0	8	0	6	0	1
Sunflower seed oil	78	0	0	0	78	0	0	0	0	0	78	2	55	0	6

FOOD BALANCE SHEET 2014	Population('000): 34 393														
PRODUCTS	Domestic supply					Domestic Utilization						Per Capita Supply			
	Production	ImportS	Exports	Stock Variation	Total Domestic Supply	Processed	Loss	Feed	Seed	Other uses	Food	Per Year Food	Calories (PER DAY)	Proteins (PER DAY)	Fats (PER DAY)
	1000 Metric Tons											Kg.	Kcal	g	g
Rape and mustard oil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cottonseed oil	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0
Palm kernel oil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Palm oil	0	267	10	-15	272	0	0	0	0	1	271	8	191	0	22
Copra oil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sesame seed oil	17	0	0	0	17	0	0	0	0	0	17	1	12	0	1
Olive and residue oil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maize Germ Oil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oilcrops Oil, Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vegetables	349	15	9	0	355	0	7	0	0	0	347	10	10	0	0
Tomatoes and products	36	0	6	0	31	0	0	0	0	0	30	1	0	0	0
Onions, dry	310	0	0	0	310	0	7	0	0	0	303	9	9	0	0
Vegetables, other and prod	3	14	3	0	14	0	0	0	0	0	14	0	0	0	0
Fruits (excl wine)	4580	6	53	0	4534	227	94	0	0	0	4213	122	298	3	1
Oranges,tang-mand and prod.	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
Lemons, limes and prod.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grapefruit and products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Citrus fruit nes and prod.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Banana	39	0	0	0	39	0	3	0	0	0	36	1	2	0	0
Plantains	4538	0	51	0	4487	227	91	0	0	0	4169	121	296	3	1
Apples and products	0	2	0	0	2	0	0	0	0	0	2	0	0	0	0
Pineapples and products	3	0	1	0	3	0	0	0	0	0	3	0	0	0	0
Dates	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

FOOD BALANCE SHEET 2014	Population('000):					34 393									
	Domestic supply					Domestic Utilization						Per Capita Supply			
PRODUCTS	Production	ImportS	Exports	Stock Variation	Total Domestic Supply	Processed	Loss	Feed	Seed	Other uses	Food	Per Year Food	Calories	Proteins	Fats
													PER DAY		
	1000 Metric Tons											Kg.	Kcal	g	g
Grapes and prod(-excl.wine)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Fruit, other and products	0	2	0	0	2	0	0	0	0	0	2	0	0	0	0
Stimulants	278	1	261	-8	25	0	0	0	0	3	22	1	1	0	0
Coffee and products	212	0	212	-7	7	0	0	0	0	0	7	0	0	0	0
Cocoa beans and products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tea	65	0	50	-2	18	0	0	0	0	3	14	0	0	0	0
Spices	2	1	0	0	3	0	0	0	0	0	3	0	1	0	0
Pepper	2	0	0	0	2	0	0	0	0	0	2	0	0	0	0
Pimento	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cloves	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Spices, other	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0
Alcoholic beverages	2748	16	3	0	2761	0	0	0	0	3	2758	80	88	1	0
Wine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Barley beer	8	0	0	0	8	0	0	0	0	0	8	0	0	0	0
Beverages, fermented	2740	0	0	0	2740	0	0	0	0	2	2738	80	85	1	0
Beverages, alcoholic	0	13	2	0	11	0	0	0	0	0	11	0	3	0	0
Alcohol, non-food	0	2	1	0	1	0	0	0	0	1	0	0	0	0	0
Meat	322	0	0	0	322	0	0	0	0	0	322	9	49	4	4
Meat and products, bovine	203	0	0	0	203	0	0	0	0	0	203	6	31	2	2
Meat and prod, sheep and goat	38	0	0	0	38	0	0	0	0	0	38	1	5	0	0
Meat and products, pig	22	0	0	0	22	0	0	0	0	0	22	1	7	0	1
Meat and products, poultry	59	0	0	0	59	0	0	0	0	0	59	2	6	1	0
Meat and prod, other anim.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Offals	66	0	0	0	66	0	0	0	0	0	66	2	6	1	0

FOOD BALANCE SHEET 2014	Population('000): 34 393														
	Domestic supply					Domestic Utilization						Per Capita Supply			
PRODUCTS	Production	ImportS	Exports	Stock Variation	Total Domestic Supply	Processed	Loss	Feed	Seed	Other uses	Food	Per Year Food	Calories	Proteins	Fats
													PER DAY		
	1000 Metric Tons											Kg.	Kcal	g	g
Offals, edible	66	0	0	0	66	0	0	0	0	0	66	2	6	1	0
Animal fats	7	0	0	0	7	0	0	0	0	0	7	0	5	0	1
Fats, animals, raw	7	0	0	0	7	0	0	0	0	0	7	0	5	0	1
Butter, ghee	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cream	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Milk	1596	7	39	0	1564	0	80	0	0	0	1484	43	75	4	4
Milk and prod (excl butter)	1596	7	39	0	1564	0	80	0	0	0	1484	43	75	4	4
Eggs	43	0	0	0	43	0	1	0	4	0	38	1	4	0	0
Eggs and products	43	0	0	0	43	0	1	0	4	0	38	1	4	0	0
Fish and sea food	573	1	29	1	544	1	27	130	0	0	387	11	21	3	1
Fish	573	1	29	1	544	1	27	130	0	0	387	11	21	3	1
Miscellaneous	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Infant food	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Miscellaneous	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

FOOD BALANCE SHEET 2015	Population('000):										35 383				
	Domestic supply					Domestic Utilization						Per Capita Supply			
PRODUCTS	Production	ImportS	Exports	Stock Variation	Total Domestic Supply	Processed	Loss	Feed	Seed	Other uses	Food	Per Year Food	Calories (PER DAY)	Proteins (PER DAY)	Fats (PER DAY)
	1000 Metric Tons											Kg.	Kcal	g	g
Grand total													2310	54	53
Vegetal products.													2155	43	43
Animal products.													155	11	10
Cereals (excl beer)	3719	510	353	-215	4092	533	218	343	48	150	2800	79	640	16	4
Wheat and products	22	469	31	0	460	0	14	0	2	1	443	13	94	3	0
Barley and products	0	14	0	-1	15	0	0	0	0	1	14	0	4	0	0
Maize and products	2811	2	283	-214	2745	346	131	288	32	142	1806	51	432	10	2
Rye and products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oats and products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Millet and products	237	0	13	0	224	19	12	16	1	0	175	5	36	1	0
Sorghum and products	411	5	25	0	391	168	56	39	6	0	122	3	30	1	0
Rice and prod (milled eq.)	238	20	0	0	258	0	5	0	7	7	238	7	44	1	0
Cereals,others and products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Starchy roots and products	4943	22	19	-4	4950	0	273	0	15	238	4425	125	352	4	0
Potatoes and products	173	2	11	0	165	0	4	0	15	0	146	4	8	0	0
Cassava and products	2727	20	8	-4	2744	0	175	0	0	135	2433	69	207	2	0
Sweet potatoes	2042	0	0	0	2042	0	94	0	0	102	1846	52	137	2	0
Roots and tubers,oth and prod.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yams	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sugar crops	3769	0	0	0	3769	3602	2	0	0	0	164	5	4	0	0
Sugar cane	3769	0	0	0	3769	3602	2	0	0	0	164	5	4	0	0
Sugar beets	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sugar & Sweeteners	502	174	28	0	649	0	0	0	0	3	646	18	176	0	0

FOOD BALANCE SHEET 2015	Population('000):									35 383					
	Domestic supply					Domestic Utilization						Per Capita Supply			
PRODUCTS	Production	ImportS	Exports	Stock Variation	Total Domestic Supply	Processed	Loss	Feed	Seed	Other uses	Food	Per Year Food	Calories	Proteins	Fats
													PER DAY		
	1000 Metric Tons											Kg.	Kcal	g	g
Sugar non-centrifugal	4	0	0	0	4	0	0	0	0	0	4	0	1	0	0
Sugar and prod. (raw eq.)	498	173	27	0	643	0	0	0	0	3	641	18	175	0	0
Sweeteners, other and prod	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0
Honey	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pulses	1124	3	151	-10	987	0	75	0	55	40	817	23	214	14	1
Beans, dry and products	1080	1	146	-10	945	0	69	0	54	40	783	22	205	13	1
Peas, dry and products	13	1	0	0	14	0	1	0	0	0	13	0	3	0	0
Pulses, other and prod.	31	1	5	0	28	0	5	0	1	0	22	1	6	0	0
Treenuts	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nuts and products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oilcrops (excl. prod.)	715	3	61	0	656	106	67	0	31	0	453	13	127	5	9
Soyabeans and products	28	0	9	0	19	2	1	0	1	0	16	0	6	1	0
Groundnuts (shelled eq)	296	2	10	0	289	33	56	0	26	0	173	5	55	3	4
Sunflower seed	245	0	0	0	246	38	0	0	1	0	206	6	40	1	2
Rape and Mustardseed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Coconuts and copra	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sesame seed	145	0	43	0	103	33	10	0	2	0	57	2	25	1	2
Palmkernels	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Olives	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oilcrops others	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vegetable oils	103	268	12	-13	372	0	0	0	0	1	372	11	254	0	29
Soyabean oil	2	0	0	0	2	0	0	0	0	0	2	0	1	0	0
Groundnut oil	6	0	0	0	6	0	0	0	0	0	6	0	4	0	0
Sunflower seed oil	78	0	0	0	78	0	0	0	0	0	78	2	54	0	6

FOOD BALANCE SHEET 2015	Population('000):									35 383					
	Domestic supply					Domestic Utilization						Per Capita Supply			
PRODUCTS	Production	ImportS	Exports	Stock Variation	Total Domestic Supply	Processed	Loss	Feed	Seed	Other uses	Food	Per Year Food	Calories	Proteins	Fats
													PER DAY		
	1000 Metric Tons											Kg.	Kcal	g	g
Rape and mustard oil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cottonseed oil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Palm kernel oil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Palm oil	0	268	11	-13	270	0	0	0	0	1	269	8	184	0	21
Copra oil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sesame seed oil	16	0	0	0	16	0	0	0	0	0	16	0	11	0	1
Olive and residue oil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maize Germ Oil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oilcrops Oil, Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vegetables	370	12	9	0	373	0	8	0	0	2	363	10	11	0	0
Tomatoes and products	38	0	5	0	34	0	1	0	0	2	31	1	0	0	0
Onions, dry	329	0	0	0	329	0	7	0	0	0	322	9	10	0	0
Vegetables, other and prod	3	12	5	0	11	0	0	0	0	0	10	0	0	0	0
Fruits (excl wine)	4629	8	15	0	4621	237	97	0	0	0	4287	121	294	3	1
Oranges,tang-mand and prod.	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0
Lemons, limes and prod.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grapefruit and products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Citrus fruit nes and prod.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Banana	39	0	0	0	39	0	3	0	0	0	37	1	2	0	0
Plantains	4586	0	12	0	4574	237	95	0	0	0	4242	120	292	3	1
Apples and products	0	4	0	0	3	0	0	0	0	0	3	0	0	0	0
Pineapples and products	4	0	1	0	2	0	0	0	0	0	2	0	0	0	0
Dates	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

FOOD BALANCE SHEET 2015	Population('000):									35 383					
	Domestic supply					Domestic Utilization						Per Capita Supply			
PRODUCTS	Production	ImportS	Exports	Stock Variation	Total Domestic Supply	Processed	Loss	Feed	Seed	Other uses	Food	Per Year Food	Calories	Proteins	Fats
													PER DAY		
	1000 Metric Tons											Kg.	Kcal	g	g
Grapes and prod(excl.wine)	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0
Fruit, other and products	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0
Stimulants	288	1	262	-5	31	0	0	0	0	3	28	1	1	0	0
Coffee and products	229	0	219	-3	13	0	0	0	0	0	13	0	0	0	0
Cocoa beans and products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tea	59	1	43	-2	18	0	0	0	0	3	15	0	0	0	0
Spices	2	1	1	0	3	0	0	0	0	0	3	0	1	0	0
Pepper	2	0	0	0	2	0	0	0	0	0	2	0	0	0	0
Pimento	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cloves	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Spices, other	0	1	1	0	1	0	0	0	0	0	1	0	0	0	0
Alcoholic beverages	2576	18	5	0	2590	0	0	0	0	2	2587	73	81	1	0
Wine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Barley beer	12	0	0	0	12	0	0	0	0	0	12	0	0	0	0
Beverages, fermented	2564	0	0	0	2564	0	0	0	0	1	2563	72	78	1	0
Beverages, alcoholic	0	14	2	0	12	0	0	0	0	0	12	0	3	0	0
Alcohol, non-food	0	4	3	0	1	0	0	0	0	1	0	0	0	0	0
Meat	333	0	0	0	333	0	0	0	0	0	333	9	49	4	4
Meat and products, bovine	209	0	0	0	209	0	0	0	0	0	209	6	31	2	2
Meat and prod, sheep and goat	39	0	0	0	39	0	0	0	0	0	39	1	5	0	0
Meat and products, pig	23	0	0	0	23	0	0	0	0	0	23	1	7	0	1
Meat and products, poultry	63	0	0	0	62	0	0	0	0	0	62	2	6	1	0
Meat and prod, other anim.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Offals	68	0	0	0	68	0	0	0	0	0	68	2	6	1	0

FOOD BALANCE SHEET 2015	Population('000):										35 383				
	Domestic supply					Domestic Utilization						Per Capita Supply			
PRODUCTS	Production	ImportS	Exports	Stock Variation	Total Domestic Supply	Processed	Loss	Feed	Seed	Other uses	Food	Per Year Food	Calories	Proteins	Fats
													PER DAY		
	1000 Metric Tons											Kg.	Kcal	g	g
Offals, edible	68	0	0	0	68	0	0	0	0	0	68	2	6	1	0
Animal fats	7	0	0	0	7	0	0	0	0	0	7	0	5	0	1
Fats, animals, raw	7	0	0	0	7	0	0	0	0	0	7	0	5	0	1
Butter, ghee	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cream	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Milk	1617	7	70	0	1553	0	74	0	0	0	1480	42	72	4	4
Milk and prod (excl butter)	1617	7	70	0	1553	0	74	0	0	0	1480	42	72	4	4
Eggs	44	0	0	0	44	0	1	0	4	0	39	1	4	0	0
Eggs and prod-ucts	44	0	0	0	44	0	1	0	4	0	39	1	4	0	0
Fish and sea food	572	2	35	2	537	2	34	130	0	0	374	11	20	3	1
Fish	572	2	35	2	537	2	34	130	0	0	374	11	20	3	1
Miscellaneous	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Infant food	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Miscellaneous	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

FOOD BALANCE SHEET 2016	Population('000):										36 393				
	Domestic supply					Domestic Utilization						Per Capita Supply			
PRODUCTS	Production	Imports	Exports	Stock Variation	Total Domestic Supply	Processed	Loss	Feed	Seed	Other uses	Food	Per Year Food	Calories	Proteins	Fats
													PER DAY		
	1000 Metric Tons											Kg.	Kcal	g	g
Grand total													2133	49	56
Vegetal products.													1979	38	46
Animal products.													154	11	10
Cereals (excl beer)	3279	661	283	-146	3803	484	192	270	42	131	2684	74	592	15	3
Wheat and products	22	569	35	0	556	0	17	0	2	6	532	15	109	3	1
Barley and products	0	12	0	0	12	0	0	0	0	0	12	0	3	0	0
Maize and products	2482	1	226	-145	2404	327	120	236	30	125	1566	43	364	9	2
Rye and products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oats and products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Millet and products	194	0	5	0	189	7	4	5	0	0	172	5	35	1	0
Sorghum and products	366	9	17	0	358	150	47	29	5	0	127	3	31	1	0
Rice and prod (milled eq.)	215	69	0	0	284	0	4	0	6	0	274	8	50	1	0
Cereals,others and products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Starchy roots and products	4811	12	22	2	4799	0	244	0	15	129	4411	121	342	4	0
Potatoes and products	172	3	11	0	163	0	4	0	15	0	144	4	8	0	0
Cassava and products	2729	10	11	2	2725	0	172	0	0	51	2503	69	207	2	0
Sweet potatoes	1911	0	0	0	1911	0	68	0	0	78	1764	48	128	2	0
Roots and tubers,oth and prod.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yams	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sugar crops	3766	0	0	0	3766	3591	2	0	0	0	172	5	4	0	0
Sugar cane	3766	0	0	0	3766	3591	2	0	0	0	172	5	4	0	0
Sugar beets	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sugar & Sweeteners	500	140	33	0	606	0	0	0	0	1	605	17	161	0	0
Sugar non-centrifugal	3	0	0	0	2	0	0	0	0	0	2	0	0	0	0

FOOD BALANCE SHEET 2016	Population('000): 36 393														
	Domestic supply					Domestic Utilization						Per Capita Supply			
PRODUCTS	Production	Imports	Exports	Stock Variation	Total Domestic Supply	Processed	Loss	Feed	Seed	Other uses	Food	Per Year Food	Calories	Proteins	Fats
													PER DAY		
	1000 Metric Tons											Kg.	Kcal	g	g
Sugar and prod. (raw eq.)	497	140	33	0	603	0	0	0	0	1	602	17	160	0	0
Sweeteners, other and prod	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Honey	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pulses	855	5	194	-35	700	0	15	0	9	0	676	19	172	11	1
Beans, dry and products	812	0	182	-35	666	0	11	0	9	0	646	18	164	11	1
Peas, dry and products	13	3	0	0	15	0	2	0	0	0	14	0	4	0	0
Pulses, other and prod.	30	2	12	0	19	0	2	0	1	0	16	0	4	0	0
Treenuts	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nuts and products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oilcrops (excl. prod.)	674	5	28	0	651	107	56	0	26	0	463	13	131	5	9
Soyabeans and products	26	0	11	0	15	2	1	0	0	0	13	0	5	1	0
Groundnuts (shelled eq)	275	5	2	0	278	33	48	0	22	0	175	5	55	3	4
Sunflower seed	238	0	0	0	238	37	0	0	1	0	200	5	38	1	2
Rape and Mustard seed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Coconuts and copra	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sesame seed	135	0	16	0	119	35	8	0	2	0	75	2	32	1	3
Palmkernels	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Olives	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oilcrops others	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vegetable oils	111	307	12	-8	414	0	0	0	0	0	414	11	275	0	31
Soyabean oil	2	0	2	0	1	0	0	0	0	0	1	0	1	0	0
Groundnut oil	8	0	0	0	8	0	0	0	0	0	8	0	5	0	1
Sunflower seed oil	78	0	0	0	78	0	0	0	0	0	78	2	52	0	6
Rape and mustard oil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

FOOD BALANCE SHEET 2016	Population('000):										36 393				
	Domestic supply					Domestic Utilization						Per Capita Supply			
PRODUCTS	Production	Imports	Exports	Stock Variation	Total Domestic Supply	Processed	Loss	Feed	Seed	Other uses	Food	Per Year Food	Calories	Proteins	Fats
													PER DAY		
	1000 Metric Tons											Kg.	Kcal	g	g
Cottonseed oil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Palm kernel oil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Palm oil	1	307	10	-8	306	0	0	0	0	0	306	8	203	0	23
Copra oil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sesame seed oil	21	0	0	0	21	0	0	0	0	0	21	1	14	0	2
Olive and residue oil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maize Germ Oil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oilcrops Oil, Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vegetables	381	16	15	0	381	0	9	0	0	2	371	10	10	0	0
Tomatoes and products	39	1	7	0	33	0	1	0	0	2	30	1	0	0	0
Onions, dry	339	0	0	0	339	0	8	0	0	0	331	9	10	0	0
Vegetables, other and prod	3	15	8	0	10	0	0	0	0	0	10	0	0	0	0
Fruits (excl wine)	3401	7	15	0	3393	169	94	0	0	0	3131	86	209	2	0
Orang-es,tang-mand and prod.	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
Lemons, limes and prod.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grapefruit and products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Citrus fruit nes and prod.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Banana	29	0	0	0	29	0	2	0	0	0	27	1	1	0	0
Plantains	3369	0	11	0	3358	169	91	0	0	0	3098	85	208	2	0
Apples and prod-ucts	0	4	0	0	4	0	0	0	0	0	4	0	0	0	0
Pineapples and products	4	0	2	0	1	0	0	0	0	0	1	0	0	0	0
Dates	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grapes and prod(-excl.wine)	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0

FOOD BALANCE SHEET 2016	Population('000):										36 393				
	Domestic supply					Domestic Utilization						Per Capita Supply			
PRODUCTS	Production	Imports	Exports	Stock Variation	Total Domestic Supply	Processed	Loss	Feed	Seed	Other uses	Food	Per Year Food	Calories	Proteins	Fats
													PER DAY		
	1000 Metric Tons											Kg.	Kcal	g	g
Fruit, other and products	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0
Stimulants	282	1	254	-3	33	0	0	0	0	0	33	1	1	0	0
Coffee and products	243	0	211	0	33	0	0	0	0	0	33	1	1	0	0
Cocoa beans and products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tea	39	0	43	-3	0	0	0	0	0	0	0	0	0	0	0
Spices	2	1	1	0	3	0	0	0	0	0	3	0	1	0	0
Pepper	2	0	1	0	1	0	0	0	0	0	1	0	0	0	0
Pimento	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cloves	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Spices, other	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0
Alcoholic beverages	2641	18	4	0	2656	0	0	0	0	2	2653	73	81	1	0
Wine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Barley beer	21	0	0	0	21	0	0	0	0	0	21	1	1	0	0
Beverages, fermented	2621	0	0	0	2621	0	0	0	0	1	2620	72	77	1	0
Beverages, alcoholic	0	16	3	0	13	0	0	0	0	0	13	0	3	0	0
Alcohol, non-food	0	2	1	0	1	0	0	0	0	1	0	0	0	0	0
Meat	347	0	0	0	347	0	0	0	0	0	347	10	49	4	4
Meat and products, bovine	214	0	0	0	214	0	0	0	0	0	214	6	31	2	2
Meat and prod, sheep and goat	40	0	0	0	40	0	0	0	0	0	40	1	5	0	0
Meat and products, pig	24	0	0	0	24	0	0	0	0	0	24	1	7	0	1
Meat and products, poultry	69	0	0	0	69	0	0	0	0	0	69	2	6	1	0
Meat and prod, other anim.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Offals	70	0	0	0	70	0	0	0	0	0	70	2	6	1	0
Offals, edible	70	0	0	0	70	0	0	0	0	0	70	2	6	1	0

FOOD BALANCE SHEET 2016	Population('000):										36 393				
	Domestic supply					Domestic Utilization						Per Capita Supply			
PRODUCTS	Production	Imports	Exports	Stock Variation	Total Domestic Supply	Processed	Loss	Feed	Seed	Other uses	Food	Per Year Food	Calories	Proteins	Fats
													PER DAY		
	1000 Metric Tons											Kg.	Kcal	g	g
Animal fats	8	0	0	0	8	0	0	0	0	0	8	0	5	0	1
Fats, animals, raw	8	0	0	0	8	0	0	0	0	0	8	0	5	0	1
Butter, ghee	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cream	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Milk	1684	2	122	0	1564	0	78	0	0	0	1486	41	71	3	4
Milk and prod (excl butter)	1684	2	122	0	1564	0	78	0	0	0	1486	41	71	3	4
Eggs	44	0	4	0	40	0	1	0	4	0	35	1	3	0	0
Eggs and products	44	0	4	0	40	0	1	0	4	0	35	1	3	0	0
Fish and sea food	588	2	35	3	551	3	30	134	0	0	391	11	20	3	1
Fish	588	2	35	3	551	3	30	134	0	0	391	11	20	3	1
Miscellaneous	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Infant food	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Miscellaneous	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

FOOD BALANCE SHEET 2017	Population('000):											37 421			
	Domestic supply					Domestic Utilization						Per Capita Supply			
PRODUCTS	Production	ImportS	Exports	Stock Variation	Total Domestic Supply	Processed	Loss	Feed	Seed	Other uses	Food	Per Year Food	Calories	Proteins	Fats
													PER DAY		
	1000 Metric Tons											Kg.	Kcal	g	g
Grand total													2203	51	56
Vegetal products.													2053	40	47
Animal products.													150	11	9
Cereals (excl beer)	3650	883	528	-141	4147	452	216	285	48	161	2985	80	640	16	4
Wheat and products	22	689	32	0	679	0	20	0	2	13	643	17	129	4	1
Barley and products	0	21	0	0	21	0	0	0	0	0	21	1	5	0	0
Maize and products	2767	3	347	-141	2564	295	122	245	32	139	1732	46	392	9	2
Rye and products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oats and products	0	0	1	-1	0	0	0	0	0	0	0	0	0	0	0
Millet and products	212	0	82	0	129	7	11	5	1	0	106	3	21	1	0
Sorghum and products	411	16	66	0	360	151	58	36	6	0	110	3	26	1	0
Rice and prod (milled eq.)	239	155	0	0	394	0	6	0	7	8	372	10	68	1	0
Cereals,others and products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Starchy roots and products	4833	32	29	3	4832	0	241	0	16	47	4529	121	342	4	0
Potatoes and products	174	19	13	0	179	0	5	0	16	0	158	4	8	0	0
Cassava and products	2730	13	15	3	2724	0	167	0	0	0	2557	68	206	2	0
Sweet potatoes	1930	0	1	0	1929	0	68	0	0	47	1814	48	128	2	0
Roots and tubers,oth and prod.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yams	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sugar crops	3872	0	0	0	3872	3698	2	0	0	0	172	5	4	0	0
Sugar cane	3872	0	0	0	3872	3698	2	0	0	0	172	5	4	0	0
Sugar beets	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sugar & Sweeteners	516	199	17	0	698	0	0	0	0	4	694	19	179	0	0

FOOD BALANCE SHEET 2017	Population('000):										37 421				
PRODUCTS	Domestic supply					Domestic Utilization						Per Capita Supply			
	Production	ImportS	Exports	Stock Variation	Total Domestic Supply	Processed	Loss	Feed	Seed	Other uses	Food	Per Year Food	Calories (PER DAY)	Proteins (PER DAY)	Fats (PER DAY)
	1000 Metric Tons											Kg.	Kcal	g	g
Sugar non-centrifugal	5	0	1	0	5	0	0	0	0	0	4	0	1	0	0
Sugar and prod. (raw eq.)	510	199	16	0	693	0	0	0	0	4	690	18	178	0	0
Sweeteners, other and prod	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Honey	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pulses	1058	11	262	-23	830	0	64	0	44	0	722	19	179	12	1
Beans, dry and products	1013	4	258	-23	782	0	58	0	43	0	681	18	168	11	1
Peas, dry and products	13	5	1	0	17	0	2	0	0	0	15	0	4	0	0
Pulses, other and prod.	31	2	3	0	31	0	4	0	1	0	26	1	7	0	0
Treenuts	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nuts and products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oil crops	714	26	36	0	704	135	67	0	31	0	471	13	131	6	9
Soyabeans and products	28	1	8	0	21	2	1	0	0	0	18	0	7	1	0
Groundnuts (shelled eq)	297	24	3	0	318	57	58	0	27	0	177	5	55	3	4
Sunflower seed	244	0	3	0	241	38	0	0	1	0	202	5	37	1	2
Rape and Mustard seed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Coconuts and copra	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sesame seed	146	0	22	0	124	39	9	0	2	0	74	2	31	1	3
Palmkernels	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Olives	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oilcrops others	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vegetable oils	113	339	10	-4	446	0	0	0	0	0	446	12	289	0	33
Soyabean oil	3	0	1	0	2	0	0	0	0	0	2	0	1	0	0
Groundnut oil	11	0	0	0	11	0	0	0	0	0	11	0	7	0	1
Sunflower seed oil	77	0	0	0	77	0	0	0	0	0	77	2	50	0	6

FOOD BALANCE SHEET 2017	Population('000):											37 421			
	Domestic supply					Domestic Utilization						Per Capita Supply			
PRODUCTS	Production	ImportS	Exports	Stock Variation	Total Domestic Supply	Processed	Loss	Feed	Seed	Other uses	Food	Per Year Food	Calories	Proteins	Fats
													PER DAY		
	1000 Metric Tons											Kg.	Kcal	g	g
Rape and mustard oil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cottonseed oil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Palm kernel oil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Palm oil	2	339	8	-4	336	0	0	0	0	0	336	9	217	0	25
Copra oil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sesame seed oil	20	0	0	0	20	0	0	0	0	0	20	1	13	0	1
Olive and residue oil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maize Germ Oil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oilcrops Oil, Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vegetables	393	27	31	0	389	0	9	0	0	3	378	10	10	0	0
Tomatoes and products	41	1	17	0	24	0	1	0	0	2	21	1	0	0	0
Onions, dry	349	0	0	0	349	0	8	0	0	0	342	9	10	0	0
Vegetables, other and prod	3	26	14	0	16	0	0	0	0	1	15	0	0	0	0
Fruits (excl wine)	3499	8	32	0	3475	171	92	0	0	0	3212	86	209	2	0
Oranges,tang-mand and prod.	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0
Lemons, limes and prod.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grapefruit and products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Citrus fruit nes and prod.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Banana	30	0	0	0	30	0	2	0	0	0	27	1	1	0	0
Plantains	3465	0	25	0	3440	171	90	0	0	0	3179	85	207	2	0
Apples and products	0	4	0	0	4	0	0	0	0	0	4	0	0	0	0
Pineapples and products	4	0	3	0	1	0	0	0	0	0	1	0	0	0	0
Dates	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

FOOD BALANCE SHEET 2017	Population('000):											37 421			
	Domestic supply					Domestic Utilization						Per Capita Supply			
PRODUCTS	Production	ImportS	Exports	Stock Variation	Total Domestic Supply	Processed	Loss	Feed	Seed	Other uses	Food	Per Year Food	Calories	Proteins	Fats
													PER DAY		
	1000 Metric Tons											Kg.	Kcal	g	g
Grapes and prod(excl.wine)	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0
Fruit, other and products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Stimulants	352	4	338	-10	29	0	0	0	0	0	29	1	1	0	0
Coffee and products	302	3	287	-10	29	0	0	0	0	0	29	1	1	0	0
Cocoa beans and products	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
Tea	50	0	50	0	0	0	0	0	0	0	0	0	0	0	0
Spices	2	1	1	0	2	0	0	0	0	0	2	0	1	0	0
Pepper	2	0	1	0	1	0	0	0	0	0	1	0	0	0	0
Pimento	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cloves	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Spices, other	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0
Alcoholic beverages	2348	18	6	0	2359	0	0	0	0	1	2358	63	70	1	0
Wine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Barley beer	44	0	0	0	44	0	0	0	0	0	44	1	1	0	0
Beverages, fermented	2304	0	0	0	2304	0	0	0	0	1	2303	62	67	1	0
Beverages, alcoholic	0	15	4	0	11	0	0	0	0	0	11	0	2	0	0
Alcohol, non-food	0	3	2	0	1	0	0	0	0	1	0	0	0	0	0
Meat	344	0	0	0	343	0	0	0	0	0	343	9	47	3	4
Meat and products, bovine	211	0	0	0	211	0	0	0	0	0	211	6	29	2	2
Meat and prod, sheep and goat	40	0	0	0	40	0	0	0	0	0	40	1	5	0	0
Meat and products, pig	24	0	0	0	24	0	0	0	0	0	24	1	7	0	1
Meat and products, poultry	68	0	0	0	68	0	0	0	0	0	68	2	6	1	0
Meat and prod, other anim.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

FOOD BALANCE SHEET 2017	Population('000):											37 421			
PRODUCTS	Domestic supply					Domestic Utilization						Per Capita Supply			
	Production	ImportS	Exports	Stock Variation	Total Domestic Supply	Processed	Loss	Feed	Seed	Other uses	Food	Per Year Food	Calories	Proteins	Fats
													PER DAY		
	1000 Metric Tons											Kg.	Kcal	g	g
Offals	69	0	2	0	67	0	0	0	0	0	67	2	5	1	0
Offals, edible	69	0	2	0	67	0	0	0	0	0	67	2	5	1	0
Animal fats	8	0	0	0	8	0	0	0	0	0	8	0	5	0	0
Fats, animals, raw	8	0	0	0	8	0	0	0	0	0	8	0	5	0	0
Butter, ghee	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cream	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Milk	1663	2	135	0	1530	0	75	0	0	0	1455	39	67	3	4
Milk and prod (excl butter)	1663	2	135	0	1530	0	75	0	0	0	1455	39	67	3	4
Eggs	45	0	2	0	43	0	1	0	5	0	38	1	3	0	0
Eggs and prod-ucts	45	0	2	0	43	0	1	0	5	0	38	1	3	0	0
Fish and sea food	619	5	32	4	588	4	27	141	0	0	425	11	21	3	1
Fish	619	5	32	4	588	4	27	141	0	0	425	11	21	3	1
Miscellaneous	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Infant food	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Miscellaneous	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

FOOD BALANCE SHEET 2018	Population('000):											38 469			
	Domestic supply					Domestic Utilization						Per Capita Supply			
PRODUCTS	Production	ImportS	Exports	Stock Variation	Total Domestic Supply	Processed	Loss	Feed	Seed	Other uses	Food	Per Year Food	Calories	Proteins	Fats
													PER DAY		
	1000 Metric Tons											Kg.	Kcal	g	g
Grand total													2083	48	55
Vegetal products.													1932	37	46
Animal products.													151	11	9
Cereals (excl beer)	3652	761	615	-158	3957	421	214	270	49	92	2911	76	608	15	3
Wheat and products	23	657	34	0	646	0	19	0	2	9	616	16	120	4	1
Barley and products	0	31	1	0	30	0	0	0	0	1	30	1	7	0	0
Maize and products	2773	1	462	-158	2470	284	122	231	33	67	1733	45	381	9	2
Rye and products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oats and products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Millet and products	239	0	27	0	212	16	20	14	2	0	160	4	30	1	0
Sorghum and products	372	18	91	0	298	121	47	25	4	0	101	3	23	1	0
Rice and prod (milled eq.)	246	55	0	0	301	0	6	0	8	15	272	7	47	1	0
Cereals,others and products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Starchy roots and products	4160	7	38	3	4126	0	228	0	16	0	3882	101	289	3	0
Potatoes and products	179	3	15	0	168	0	4	0	16	0	148	4	7	0	0
Cassava and products	2820	3	23	3	2797	0	170	0	0	0	2627	68	206	2	0
Sweet potatoes	1161	0	0	0	1161	0	54	0	0	0	1107	29	76	1	0
Roots and tubers,oth and prod.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Yams	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sugar crops	3978	0	0	0	3978	3804	2	0	0	0	172	4	3	0	0
Sugar cane	3978	0	0	0	3978	3804	2	0	0	0	172	4	3	0	0
Sugar beets	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sugar & Sweeteners	529	180	29	0	680	0	0	0	0	3	677	18	170	0	0
Sugar non-centrifugal	4	0	1	0	3	0	0	0	0	0	3	0	0	0	0

FOOD BALANCE SHEET 2018	Population('000):										38 469				
	Domestic supply					Domestic Utilization						Per Capita Supply			
PRODUCTS	Production	ImportS	Exports	Stock Variation	Total Domestic Supply	Processed	Loss	Feed	Seed	Other uses	Food	Per Year Food	Calories	Proteins	Fats
													PER DAY		
	1000 Metric Tons											Kg.	Kcal	g	g
Sugar and prod. (raw eq.)	525	179	28	0	677	0	0	0	0	2	674	18	170	0	0
Sweeteners, other and prod	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Honey	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pulses	985	12	229	-14	782	0	49	0	35	0	697	18	168	11	1
Beans, dry and products	942	5	225	-14	736	0	44	0	34	0	657	17	158	10	1
Peas, dry and products	12	5	3	0	15	0	2	0	0	0	13	0	3	0	0
Pulses, other and prod.	31	2	1	0	32	0	4	0	1	0	27	1	7	0	0
Treenuts	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nuts and products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oilcrops	638	23	46	-1	616	101	23	0	11	0	481	13	127	5	9
Soyabeans and products	27	0	15	0	13	2	1	0	0	0	10	0	4	0	0
Groundnuts (shelled eq)	194	22	5	-1	212	20	14	0	6	0	172	4	52	3	4
Sunflower seed	273	0	5	0	268	41	0	0	2	0	226	6	41	1	2
Rape and Mustard seed	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Coconuts and copra	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sesame seed	144	0	21	0	123	38	9	0	2	0	74	2	30	1	3
Palmkernels	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Olives	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oilcrops others	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vegetable oils	110	343	6	-8	455	0	0	0	0	0	455	12	286	0	32
Soyabean oil	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0
Groundnut oil	11	0	0	0	11	0	0	0	0	0	11	0	7	0	1
Sunflower seed oil	76	0	0	0	76	0	0	0	0	0	76	2	48	0	5
Rape and mustard oil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cottonseed oil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

FOOD BALANCE SHEET 2018	Population('000):										38 469				
	Domestic supply					Domestic Utilization						Per Capita Supply			
PRODUCTS	Production	ImportS	Exports	Stock Variation	Total Domestic Supply	Processed	Loss	Feed	Seed	Other uses	Food	Per Year Food	Calories	Proteins	Fats
													PER DAY		
	1000 Metric Tons											Kg.	Kcal	g	g
Palm kernel oil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Palm oil	0	343	4	-8	346	0	0	0	0	0	346	9	218	0	25
Copra oil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sesame seed oil	21	0	0	0	21	0	0	0	0	0	21	1	13	0	1
Olive and residue oil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Maize Germ Oil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oil crops Oil, Other	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vegetables	402	23	17	0	409	0	9	0	0	3	396	10	11	0	0
Tomatoes and products	39	0	14	0	26	0	1	0	0	2	23	1	0	0	0
Onions, dry	360	0	0	0	360	0	8	0	0	0	352	9	10	0	0
Vegetables, other and prod	3	23	3	0	22	0	0	0	0	1	21	1	1	0	0
Fruits (excl wine)	3455	10	31	-1	3435	169	93	0	0	0	3173	82	200	2	0
Oranges,tang-mand and prod.	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0
Lemons, limes and prod.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grapefruit and products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Citrus fruit nes and prod.	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0
Banana	29	0	0	0	29	0	2	0	0	0	27	1	1	0	0
Plantains	3422	0	23	0	3399	169	90	0	0	0	3139	82	199	2	0
Apples and products	0	4	0	0	4	0	0	0	0	0	4	0	0	0	0
Pineapples and products	4	0	5	-1	0	0	0	0	0	0	0	0	0	0	0
Dates	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grapes and prod(excl.wine)	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0
Fruit, other and products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Stimulants	356	10	309	0	57	0	0	0	0	0	57	1	2	0	0
Coffee and products	284	9	252	-1	42	0	0	0	0	0	42	1	1	0	0

FOOD BALANCE SHEET 2018	Population('000):										38 469				
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PRODUCTS	Production	ImportS	Exports	Stock Variation	Total Domestic Supply	Processed	Loss	Feed	Seed	Other uses	Food	Per Year Food	Calories	Proteins	Fats
													PER DAY		
	1000 Metric Tons											Kg.	Kcal	g	g
Cocoa beans and products	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0
Tea	72	0	57	1	14	0	0	0	0	0	14	0	0	0	0
Spices	2	1	1	0	2	0	0	0	0	0	2	0	1	0	0
Pepper	2	0	1	0	1	0	0	0	0	0	1	0	0	0	0
Pimento	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cloves	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Spices, other	0	1	0	0	1	0	0	0	0	0	1	0	0	0	0
Alcoholic beverages	2311	16	8	0	2319	0	0	0	0	1	2318	60	67	1	0
Wine	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Barley beer	84	0	0	0	84	0	0	0	0	0	84	2	3	0	0
Beverages, fer-mented	2227	0	0	0	2227	0	0	0	0	1	2227	58	63	1	0
Beverages, alcoholic	0	14	6	0	8	0	0	0	0	0	8	0	2	0	0
Alcohol, non-food	0	2	2	0	0	0	0	0	0	0	0	0	0	0	0
Meat	352	0	0	0	352	0	0	0	0	0	352	9	47	3	4
Meat and products, bovine	217	0	0	0	217	0	0	0	0	0	217	6	29	2	2
Meat and prod, sheep and goat	41	0	0	0	41	0	0	0	0	0	41	1	5	0	0
Meat and products, pig	25	0	0	0	25	0	0	0	0	0	25	1	7	0	1
Meat and products, poultry	70	0	0	0	70	0	0	0	0	0	70	2	6	1	0
Meat and prod, other anim.	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Offals	71	0	2	0	70	0	0	0	0	0	70	2	6	1	0
Offals, edible	71	0	2	0	70	0	0	0	0	0	70	2	6	1	0
Animal fats	8	0	0	0	8	0	0	0	0	0	8	0	4	0	0
Fats, animals, raw	8	0	0	0	8	0	0	0	0	0	8	0	4	0	0
Butter, ghee	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cream	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Milk	1701	14	118	0	1598	0	82	0	0	0	1516	39	68	3	4

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	Domestic supply					Domestic Utilization						Per Capita Supply			
PRODUCTS	Production	ImportS	Exports	Stock Variation	Total Domestic Supply	Processed	Loss	Feed	Seed	Other uses	Food	Per Year Food	Calories	Proteins	Fats
													PER DAY		
	1000 Metric Tons											Kg.	Kcal	g	g
Milk and prod (excl butter)	1701	14	118	0	1598	0	82	0	0	0	1516	39	68	3	4
Eggs	47	0	1	0	46	0	1	0	5	0	40	1	4	0	0
Eggs and products	47	0	1	0	46	0	1	0	5	0	40	1	4	0	0
Fish and sea food	652	8	39	5	615	5	25	148	0	0	447	12	22	3	1
Fish	652	8	39	5	615	5	25	148	0	0	447	12	22	3	1
Miscellaneous	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Infant food	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Miscellaneous	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Annex 4: References

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Annex 5: List of FBS Technical Working Group members

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