



REPUBLIC OF ZAMBIA

ACTION PLAN TO IMPROVE STATISTICS FOR FOOD SECURITY, SUSTAINABLE AGRICULTURE AND RURAL DEVELOPMENT IN AFRICA



STRATEGIC PLAN FOR AGRICULTURE & RURAL STATISTICS SPARS - ZAMBIA 2019 - 2023

June 2018



Co-funded by the European Union



AFRICAN DEVELOPMENT BANK GROUP



© 2018 Central Statistical Office
For comments and additional information,
Please contact:
The Director
Central Statistical Office
P.O. Box 31908
Lusaka

Tel: +260 211 251377
Website: www.zamstats.gov.zm



Action Plan to Improve Statistics For Food Security, Sustainable Agriculture and Rural Development in Africa

**Strategic Plan For Agriculture & Rural Statistics
Spars_zambia**

2019 - 2023

Ministry of National Development Planning
Central Statistical Office
Lusaka, 2018

Foreword



The agriculture sector in Zambia, like in most developing countries, plays a very significant role in the economy. For example, it is known to employ the most persons (over 50 percent of those in employment), especially in rural areas. Agriculture also is the main source of income for the majority of rural households. Given the importance of the agriculture sector to government with regards to job and wealth creation, it is very important that agricultural policy making is based on sound information. It is in this regard that the development of the Strategic Plan for Agriculture and Rural Statistics is indeed a very welcome move.

The integrated and participatory approach that was adopted in developing SPARS_ZAM (SPARS ZAMBIA), being based on an in-depth assessment of the major sub-sectors in the agriculture sector, is new and refreshing. Four Working Groups (WGs) were formed to cover each of the sub-sectors - crops, livestock, fisheries, forestry and natural resources - while a fifth WG dealt with cross-cutting issues and coordinated the planning exercise. A focal point was appointed to work with each WG. Supported by the African Development Bank each WG carried out an in-depth assessment of their respective sub-sector to thresh out factors that impede or promote the production of agricultural and rural statistics that meet the user demands. Based on this assessment each WG developed an action plan to improve the availability and quality of statistics required for planning and decision making in each in their respective sub-sectors. These action plans have been combined and are presented in this Strategic Plan.

There were a lot of consultations within and between the subsector Working Groups in coming up with their subsector reports. At each stage the sub groups had their work validated by a larger group of stakeholders having a direct concern with agricultural statistics, either as producers, users or both.

It has to be noted that SPARS-ZAM is an important sectoral input and an integral part of the National Strategy for the Development of Statistics (NSDS). This latter document addresses statistical issues in the entire National Statistical System (NSS) of Zambia.

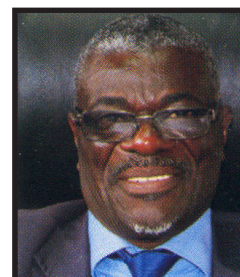
Implementation of this Strategic Plan will improve the quality and timeliness of agriculture and rural statistics. This, as mentioned above, will lead to formulation of informed government policies in the agriculture sector. I would like to thank the African Development Bank for their support to develop this Plan.



Hon. Alexander Chiteme, MP
Minister of National Development Planning.
LUSAKA

August, 2018

Acknowledgement



Development of the Strategic Plan for Agriculture and Rural Statistics for Zambia (SPARS_ZAM) was started in 2015 June, when we received the first AfDB mission. The process began with the preparation of a roadmap that clearly defined the various stages in the development of the SPARS_ZAM. The Central Statistical Office, working in conjunction with the Ministry of Agriculture and other Agricultural Sub-sectors, created an ad-hoc SPARS_ZAM Steering Committee to perform functions of a Board of Directors. The Permanent Secretary at the Ministry of Agriculture appointed members to this Steering Committee.

The development of this strategy was undertaken in a wide participatory, inclusive and consultative process, involving all key stakeholders of the National Agricultural Statistics System in Zambia. The process was coordinated by Mr. Patrick M. Chuni, Principal Statistician in charge of Agricultural Statistics at the Central Statistical Office. He is the National Coordinator for the development and implementation of SPARS_ZAM.

The technical work of developing the SPARS_ZAM was carried out through Sub-sectors Technical Working Groups which were supported by National Consultants appointed by the African Development Bank for this purpose. The consultants were each covering one sub-sector of agriculture. The consultants that were engaged were: Dr. Mataa Liywali, National Consultant for the Livestock subsector of agriculture; Mr. Dingiswayo Banda, National Consultant for the Crops subsector of agriculture; Mr. Bwalya Chendauka, National Consultant for the Forestry and Environment subsector of agriculture; Mr. Patrick Ngalande, National Consultant for the Fisheries subsector of agriculture; and then there was a fifth consultant, Mr. Daniel Daka, National Consultant for Cross-Cutting Issues in agriculture and rural statistics.

There was also invaluable input from International Consultants engaged by the AfDB for purposes of enhancing the development process of the SPARS_ZAM. These International Consultants are, namely: Dr. Jeremiah Banda, Mr. Enock Chinganda, Mr Richard Harris, and Vincent Ngendakumana. The local consultants benefitted from the experience and professionalism of the International

Consultants as they participated in the various phases of the development of SPARS_ZAM.

The Central Statistical Office would like to also thank all those who have contributed directly or indirectly to the development of SPARS_ZAM from the beginning to the end.

Finally, the Central Statistical Office and Ministry of Agriculture would like to thank the AfDB for the financial support that made it possible to successfully hold workshops and training seminars during the process of developing the SPARS_ZAM. The financial support was indeed provided by AfDB through its Country Office in Zambia, thanks to contributions made available by BMGF, DfID and EU to the Action Plan of the Global Strategy for Improving Agricultural and Rural Statistics in Africa. The International Consultants are also thanked for their diligence and technical assistance rendered during the SPARS_ZAM development.



Julius J. Shawa
Permanent Secretary
Ministry of Agriculture

August, 2018



Dr. David Shamulenge
Permanent Secretary
**Ministry of Fisheries and
Livestock**

August, 2018

Table of Content

iv	Foreword
v	Acknowledgement
vii	Table of Content
xi	List of Tables
xii	List of Figures
xiii	Abbreviations and acronyms
xv	Executive Summary
1	Chapter 1: Background And Methodology
1	1.1 Introduction
1	1.2 The Global Strategy to Improve Agriculture and Rural Statistics
2	1.3 Implementation of the Global Strategy
2	1.4 Policy Context and Rationale for SPARS_ZAM
5	1.5 SPARS_ZAM Methodology
7	1.6 Institutional Environment
7	1.6.1 Administrative Structure
8	1.6.2 The National Statistical System
8	1.6.3 Legal Framework for the Collection of Statistics
9	1.6.4 Legal Framework for Agricultural Statistics
10	1.7 Review of National Strategy for the Development of Statistics
11	1.8 Statistical Coordination Mechanisms
12	1.9 Stakeholder Analysis
12	1.9.1 Central Statistics Office
12	1.9.2 Ministry of Agriculture
13	1.9.3 Ministry of Fisheries and Livestock
13	1.9.4 Lands, National Resources & Environment
14	1.9.5 Indaba Agricultural Policy Research Institute (IAPRI)
15	1.9.6 Stakeholders with other Research, Academic and International Institutions
15	1.9.7 Zambia National Farmers Union and Affiliated Organisations
15	1.9.8 Other Civil Society Stakeholders

16 Chapter 2: Evaluation of the National Agricultural Statistics System (NASS)

16	2.1 Introduction
16	2.2 Assessment of Capacity to Produce Agriculture & Rural Statistics
17	2.2.2 Infrastructure, Equipment, Information Technology
18	2.2.3 Financial Resources
20	2.2.4 International Support
20	2.2.5 Agricultural Statistics Capacity Indicator
21	2.3 Assessment of Current Data Collection Activities
21	2.3.1 National Agricultural Census
21	2.3.2 Crop Statistics
23	2.3.3 Livestock Statistics
24	2.3.4 Fisheries Statistics
24	2.3.5 Forestry and Environment Subsector:
25	2.3.6 Prices
25	2.3.7 Trade Statistics & Informal Cross Border Trade
26	2.3.8 Data Processing, Data Management and Quality Controls
26	2.3.9 Dissemination
27	2.3.10 Challenges
28	2.4 Assessment of User Needs & Data Gaps
28	2.4.1 User Needs – Crops subsector
29	2.4.2 User Needs - Livestock Subsector
29	2.4.3 User Needs - Fisheries Subsector
30	2.4.4 User Needs - Forestry and Environment Subsector
31	2.4.5 Data Gaps
32	2.5 Main Findings: Strength, Weaknesses, Opportunities and Threats (SWOT) for NASS

34 Chapter 3: Strategic Planning

34	3.1 Introduction
34	3.2 Summary of Challenges
37	3.3 Vision and Mission Statements
37	3.4 Strategic Plan
37	3.4.1 Goals & Strategies
41	3.4.2 Activities
42	3.4.3 Calendar of Main Data Collection Activities
44	3.5 Financing Strategy
49	3.6 Monitoring & Evaluation

ACTION PLAN TO IMPROVE STATISTICS FOR FOOD SECURITY, SUSTAINABLE AGRICULTURE AND RURAL DEVELOPMENT IN AFRICA

49	3.6.1 Introduction
50	3.6.2 Monitoring Tools
50	3.6.3 Monitoring, Evaluation & Reporting
50	3.6.4 Feedback Mechanism
50	3.6.5 Results Based Logical Framework
50	3.7 Advocacy & Communication Plan
51	3.7.1 Implementation approach
52	3.7.2 Stakeholder Mapping and Prioritization Matrix
55	Annex 1: Stakeholders Consulted
59	Annex 2: List of Participating Persons/Institutions
60	Annex 3: Results Framework
64	Annex 4: Risk & Mitigation
65	Annex 5: Detailed Action Plan with Budget
68	Annex 6: Cited Literature

List of Tables

xix	Table 1: Total Annual Budget by Strategic Goal
22	Table 1: Published Confidence Intervals for Crop Production Estimates
27	Table 2: Issues and Challenges of Statistics Data Collection
33	Table 3: SWOT for National Agricultural Statistics System - Zambia
38	Table 4: Strategic Goals, Challenges addressed and Operational Strategies
43	Table 5: Calendar of main data collection activities
45	Table 6 Financing Strategy (US \$000)
48	Table 7: Financing Strategy for Main Data Collection Exercises
53	Table 8: Audiences and Key Messages

List of Figures

xix	Figure 1: Prioritisation of Budgets under SG2 – Meet the National & International demand for Agricultural Statistics
3	Figure 2: Percentage Distribution of Employed Persons by Industry
3	Figure 3: Share of Agriculture, Forestry and Fishing to the Total GDP
6	Figure 4: Governance Structure for SPARS_ZAM
19	Figure 5: Total National Budget & Allocation to Agriculture Sector, 2008-2017
47	Figure 5: Financing Strategy – SPARS_ZAM
49	Figure 6: Financing Strategy: Main Data Collection Exercises
53	Figure 7: Stakeholder Priority Matrix

Abbreviations and acronyms

ACTESA	Alliance for Commodity Trade in East and Southern Africa
AfDB	African Development Bank
AMIC	Agricultural Marketing Information Centre
ASEWS	Agriculture Statistics and Early Warning Section
AU	African Union
BMGF	Bill and Melinda Gates Foundation
CA	Census of Agriculture
CAADP	Comprehensive African Agricultural Development Program
CAPI	Computer Assisted Personal Interview
CAS	Catch Assessment Survey
CBNRM	Community Based Natural Resource Management
CFS	Crop-Forecasting Survey
CIFOR	Centre for Forestry Research
COMESA	Common Market for Eastern and Southern Africa
CSO	Central Statistical Office
DfID	Department for International Development
DMDO	District Marketing Development Officers
EA	Enumeration Area
EU	European Union
FAO	Food and Agriculture Organization
FEWSNET	Famine Early Warning Systems Network
FRA	Food Reserve Agency
GDP	Gross Domestic Product
GS	Global Strategy
GTAZ	Grain Traders Association of Zambia
IAPRI	Indaba Agricultural Policy Research Institute
ICT	Information and Communication Technology
IdCA	In-depth Country Assessment
JICA	Japanese International Development Agency
LAN	Local Area Network
LCMS	Living Conditions Monitoring Survey
LTA	Lake Tanganyika Authority
MDG	Millennium Development Goals
M&E	Monitoring and Evaluation
MLNREP	Ministry of Lands, Natural Resources & Environmental Protection
MFL	Ministry of Fisheries and Livestock

ACTION PLAN TO IMPROVE STATISTICS FOR FOOD SECURITY, SUSTAINABLE AGRICULTURE AND RURAL DEVELOPMENT IN AFRICA

MoF	Ministry of Finance
MoA	Ministry of Agriculture
NALEIC	National Livestock Epidemiology and Information Centre
NAPSA	National Pension Scheme Authority
NASS	National Agricultural Statistics System
NGO	Non-Governmental Organisations
NSC	National Strategy Coordinator
NSDS	National Strategy for the Development of Statistics
NSS	National Statistical System
ODA	Overseas Development Agency
PHS	Post-Harvest Survey
R-SNDP	Revised Sixth National Development Plan
SCARS	Steering Committee on Agriculture and Rural Statistics
SDG	Sustainable Development Goals
SPARS	Strategic Plan for Agriculture and Rural Statistics
SSWG	Sub-Sector Working Group
STWG	Subsector Technical Working Group
SWOT	Strengths, Weaknesses, Opportunities and Threats
UN	United Nations
UNECA	United Nations Economic Commission for Africa
UNFCCC	United Nations Framework Convention on Climate Change
UNSC	United Nations Statistical Commission
USAID	United States Agency for International Development
WARMA	Water Resources Management Agency
WB	World Bank
WFP	World Food Programme
ZAMSIF	Zambia Social Investment Fund
ZARI	Zambia Agriculture Research Institute
ZEGA	Zambia Export Growers Association
ZLMIS	Zambia Land Management Information System
ZNFU	Zambia National Farmers Union
ZRA	Zambia Revenue Authority

Executive Summary

The importance of the agriculture to the Zambian Economy cannot be over-emphasized. It is Government policy to move the economy away from over-dependence on mining to reliance on agriculture. As the agriculture sector employs the largest number of persons, any positive changes in this sector impacts on a lot of people. It is the sector best suited for implementing policies designed to reduce poverty and accelerate rural development. In order for the Government to make informed agricultural policy decisions, there is need for more and better statistics relating to the sector. The available statistics can lack relevance, reliability and timeliness and do not meet all the demands of users. It was in order to address these shortcomings that the CSO and the MoA sought technical assistance from the African Development Bank for the design of a Strategic Plan for Agriculture and Rural Statistics, (SPARS_ZAM).

The development of SPARS_ZAM is based on the recommendations of the Global Strategy to Improve Agriculture and Rural Statistics adopted by the international community in February 2010 at the United Nations Statistical Commission. The Action Plan for Africa of the Global Strategy encourages countries in Africa to develop SPARS which would be integrated into their National Strategy for the Development of Statistics (NSDS). SPARS would be a framework for the coordination of statistical activities within the agricultural sector and a mechanism for consultation between the Government and others on the development of agricultural statistics and the resources required.

In Zambia, the development of SPARS_ZAM followed the guidelines for the development of NSDS as described in the PARIS21 manual, and the SPARS guidelines developed by the Global Strategy Office located at the Food and Agriculture Organization of the United Nations (FAO) in Rome. The development followed a participatory approach at all stages. The plan is based on the real needs resulting from an assessment of the agricultural statistical system and the requirements of the main data users.

The different phases of the development of the SPARS_ZAM were as follows:

Launching phase

- Preparation of the Roadmap following consultations and validation by stakeholders – July 2015. Led by the CSO and MoA, a national workshop was held to officially validate the Roadmap. STWGs were established, and national consultants appointed by the AfDB to guide each subsectors work, together with a National Strategy Coordinator and Deputy National Coordinator. A workshop to launch SPARS_ZAM was held in March 2016.

ACTION PLAN TO IMPROVE STATISTICS FOR FOOD SECURITY, SUSTAINABLE AGRICULTURE AND RURAL DEVELOPMENT IN AFRICA

Assessment phase

- A workshop to train the national consultants on the assessment methodology and equip them with instruments was held in March 2016.
- A Consolidated Assessment Report was presented to stakeholders for validation in March 2017 and adopted by SCARS in the same month.

Planning phase

- The national consultants were trained in March 2017 to undertake the planning phase.
- The draft SPARS_ZAM was presented to stakeholders for validation in June 2018.

Launching the process

Once the Roadmap was developed and adopted, and in order to ensure that the SPARS initiative is comprehensive, inclusive and participatory, all key stakeholders were identified. A SPARS_ZAM Steering Committee was established, comprising members from a wide spectrum of the agriculture sector, to perform functions (in relation to SPARS_ZAM) that in other countries would be performed by the Board of Directors of the National Statistical Office. The four Subsector Technical Working Groups (STWGs) were established, namely Crops, Livestock, Fisheries, Forestry and Natural Resources (each led by one of the national consultants) to focus the development of the strategic plan, with a fifth working group looked at cross-cutting issues.

Undertaking the Assessment phase

A review of the current status of the agricultural and rural statistical system (Where are we now?) was undertaken as a primary input for the SPARS_ZAM Action Plan. Each STWG produced its own assessment which were consolidated into one overall document titled 'Report of the In-depth Country Assessment for Zambia' CSO, March 2017.

The legal mandate for the collection of statistics is set out in the 1964 Census and Statistics Act, which established the CSO. The Director of the CSO is empowered to "generally organize a coordinated scheme of social and economic statistics relating to Zambia". However the CSO does not have the capacity to produce all statistics and the Act does not provide for any formal institutional arrangements. The absence of formal Producer-User coordinating mechanisms was considered a major weakness.

Zambia's first National Strategy for the Development of Statistics (NSDS) 2014-18, proposes a new revised Act, transforming the CSO into a semi-autonomous agency, with a Board of Directors. The new Act (which has been approved by Cabinet) will also strengthen and formalize the CSO's mandate to improve coordination and harmonization of NSS.

Almost all institutions indicated they did not have adequate staff numbers for statistical work, particularly at the district level. However, the staff they had were skilled, experienced and qualified, except for the environment and meteorology sub-sectors. While the MoA/CSO are using CAPI for

data collection, other IT systems are still paper-based with hard copies relayed to district offices for entry into Excel spreadsheets. Challenges include the need for more PCs and the high cost of proprietary software.

Transportation is an issue across all sectors. Veterinary officers do not have offices nor equipment. District fishery officers share their offices and offices for staff from the natural resource sub-sectors require renovation. The financial resources for statistical work are insufficient with budgeted funds not always released in full. The absence of specific budget lines for statistical activities is an issue. The 'Agricultural Statistics Capacity Indicator' for Zambia (published by AfDB) shows an upward trend (55.4% in 2017, 51.1% in 2015, 49% in 2013), however it is currently below the African average (57.2%).

Agricultural censuses, have only been conducted in 1970/71 and 1991/92. The Livestock and Aquaculture Census in 2017 was actually a large-scale sample survey due to financial constraints. Two major crop surveys are carried out annually, a Crop Forecasting Survey (CFS) and a Post-Harvest and Livestock Survey (PHs - this is the more detailed survey, though implementation can be constrained by lack of resources). The data quality from both surveys is rated 'good' by stakeholders as are production estimates for tobacco, cotton and sugar from the various commodity Boards and Associations.

Data quality assessments for livestock and fishery statistics collated from administrative sources are a combination of 'good' and 'fair' as with vast catchment areas it is unrealistic for an extension officer to contact all households and methodologies may not be applied consistently. While survey-based estimates are rated 'fair', the frequency of all surveys needs to be improved. Most of the existing data sets in the forestry and environment sub-sectors are sourced from administrative records. Data quality for producer price collection and retail price collection is rated 'good' or 'fair'; the quality of wholesale price statistics in the MoA is rated 'poor' due to lack of staff and finance. Stakeholders considered the quality of import and export statistics, captured through formal declarations to be 'good'. However, there was concern that informal border trade was significant and this was not being captured.

The data gaps identified include the need to carry out censuses of livestock and aquaculture and the lack of complete frames for dairy processors, milk collection centres, and beehive / apiary keepers. Additional (or expanded) regular surveys are needed to cover the cost of production, income received and consumption levels for individual agricultural commodities; horticulture and fruit production; species level fish catch surveys; aquaculture production; non-timber products; labour costs and employment in agriculture; climate change adaptation measures in farming; and pesticide use.

The regular collection of farm gate and wholesale prices of agricultural commodities needs to be strengthened and the monitoring survey of informal cross-border trade needs to be restored and expanded to cover more border points and a wider range of agricultural commodities.

ACTION PLAN TO IMPROVE STATISTICS FOR FOOD SECURITY, SUSTAINABLE AGRICULTURE AND RURAL DEVELOPMENT IN AFRICA

Dara gaps within administrative systems include: agro chemicals; water use; rainfall and temperature; stock and storage statistics by crop; livestock slaughter slabs and abattoirs; number of slaughters, carcass weights; livestock disease outbreaks and vaccinations; distribution maps for livestock infrastructure; land for development in customary areas; timber products; soil surveys; and ecosystem services data.

The main strengths of the NASS are seen to be the existing statistical capacity, while weaknesses fit into 3 broad groups (governance and coordination; inadequate financial and human resources; under developed statistical systems).

The opportunities include the increased demand for agricultural data and political commitment to the development of statistics; the existence of partnerships for statistical development; and advances in IT leading to improved quality and more timely dissemination of results. High costs relating to capacity development, censuses and surveys and statistical software were seen as the main threats. Another set of threats were identified around the low level of appreciation and understanding of agricultural statistics and the lack of commitment to coordination, collaboration, networking and information sharing.

Undertaking the Planning phase – Elaboration of SPARS_ZAM Strategic Plan

The Vision of the Zambia SPARS, reflecting the future image of the national agricultural statistical system is: 'An efficient, responsive and well-coordinated source of agricultural and rural statistics'. The Mission of the Zambia SPARS, reflecting what the national agricultural statistics system should deliver, is: 'To provide quality agricultural and rural statistics for evidence-based policy and decision making for enhanced user satisfaction'.

The SPARS_ZAM Strategic Plan is a consolidation of the 4 STWG Strategic Plans. This has led to the identification of a set of challenges which not only address weaknesses, but also build on strengths, take advantage of opportunities, and treat threats. These challenges fall into 5 groups which have been set as the Strategic Goals (SG). Within each SG a set of Operational Strategies (OS) have been identified and agreed (2-3 for each SG). These are:

SG1: Improved coordination & management of agriculture statistics

- OS1.1 Improve coordination, collaboration and networking among stakeholders
- OS1.2 Improve technical coordination among data producers

SG2: Meet the national and international demand for agriculture statistics

- OS2.1 Adopt an integrated census and survey programme
- OS2.2 Enhance the compilation, analysis and reporting of data from administrative records

SG3: Strengthen statistical operations & processes

- OS3.1 Provide appropriate and adequate physical infrastructure
- OS3.2 Improve data access, knowledge management and communication
- OS3.3 Monitor & improve data quality

SG4: Implement a comprehensive human resource strategy

- OS4.1 Establish and maintain a critical mass of skilled agricultural statistics personnel
- OS4.2 Establish a training programme to develop the capacity of agricultural statistics personnel

SG5: Develop a funding strategy for statistical operations.

- OS5.1 Enhance and strengthen collaborations to support sustainable funding for agricultural statistics activities.
- OS5.2 Advance the awareness of the importance of agricultural statistics

The Strategic Plan covers a 5 year period, 2019 to 2023, to fully overlap and be integrated into NSDS2. The annual and total budget by activity is given in Annex 5. A summary by SG is given Table 1.

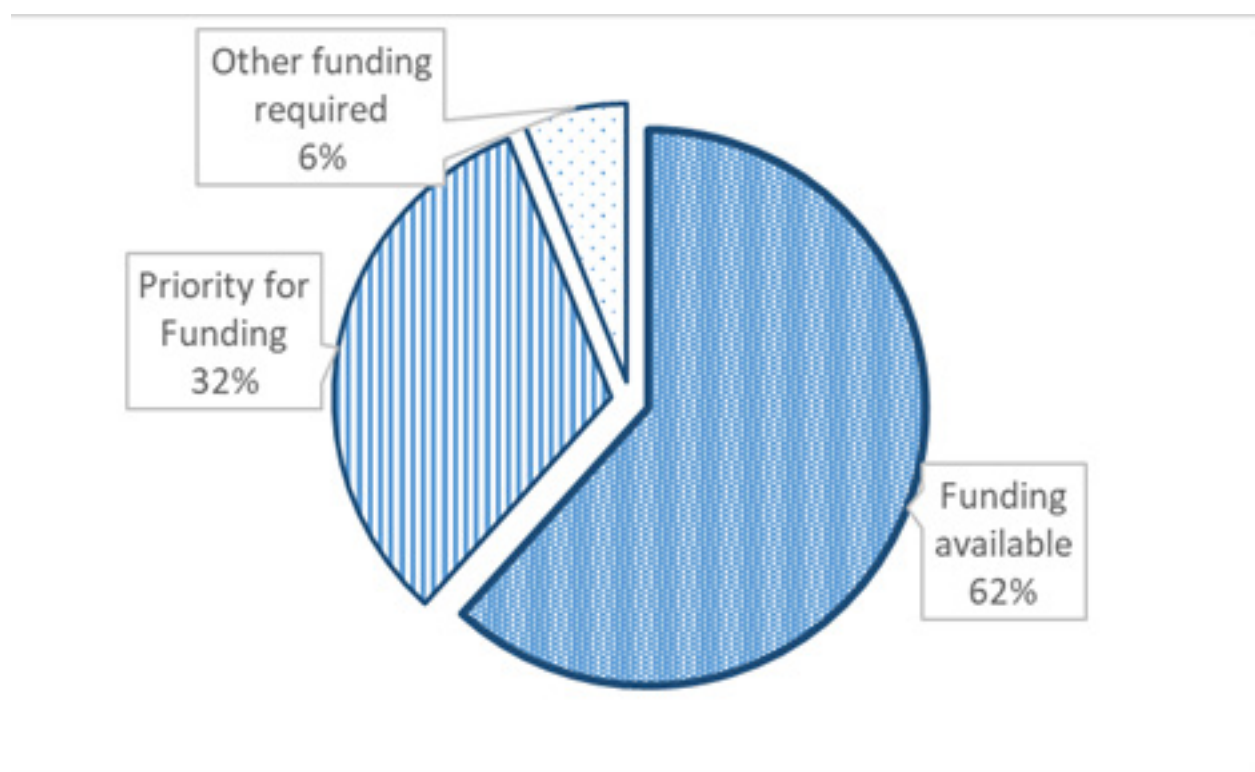
ACTION PLAN TO IMPROVE STATISTICS FOR FOOD SECURITY, SUSTAINABLE AGRICULTURE AND RURAL DEVELOPMENT IN AFRICA

Table 1: Total Annual Budget by Strategic Goal

	2019	2020	2021	2022	2023	US \$000 Total
SG1: Improved coordination & management of agriculture statistics	579	684	304	329	224	2,120
SG2: Meet the national and international demand for agriculture statistics	5,225	6,147	11,510	5,200	11,235	39,317
SG3: Strengthen statistical operations & processes	4,737	2,340	1,276	1,150	1,208	10,711
SG4: Implement a comprehensive human resource strategy	1,369	971	828	957	840	4,965
SG5: Develop a funding strategy for statistical operations	373	268	288	233	253	1,415
Total SPARS_ZAM	12,283	10,410	14,206	7,869	13,760	58,528

Each STWG also carried out a prioritization exercise, to identify funding that is anticipated and priority activities for any new funds. Of the total budget of US \$58.5m, over a half (54%) is anticipated to be available from government funding or has been committed by development partners. Of the remaining US \$26.6m still to be found, US \$21.5m is identified to be for priority activities.

Figure 1: Prioritisation of Budgets under SG2 – Meet the National & International demand for Agricultural Statistics



For activities under SG2 (meeting the demand for agricultural statistics), 62% of the total budget of 39.3m is anticipated to be available.

A results-based logical framework has been developed for the Monitoring and Evaluation of the implementation of SPARS_ZAM and is presented in Annex 3. The framework contains a number of performance indicators, with baselines and targets, that will be regularly monitored.

The design and development of an Advocacy & Communication Plan is included in SPARS_ZAM, to ensure that the Strategy reaches the entire spectrum of agriculture statistics stakeholders through an all-inclusive and participatory approach.

Chapter 1: Background And Methodology

1.1 Introduction

This chapter presents basic information on the Global Strategy for Improving Agricultural and Rural Statistics (of which SPARS_ZAM is a part). The chapter also covers the objectives, rationale and methodology for preparing SPARS_ZAM; the policy context and demand for agricultural data; the integration of the SPARS into the NSDS; and the key stakeholders, from all sub-sectors, who participated in the preparation of the SPARS.

1.2 The Global Strategy to Improve Agriculture and Rural Statistics

The Global Strategy (GS) to Improve Agricultural and Rural Statistics was adopted in February 2010 by the United Nations Statistical Commission in response to the decline in the availability and quality of agricultural statistics in many countries in recent years and to meet the need for statistics to inform emerging issues in agriculture such as the environment and the use of fuel crops for bio-fuel. The main purpose of the Global Strategy is to provide a framework and methodology that will improve the quality and availability of national and international food and agriculture statistics to guide policy analysis and decision making. This strategy aims at:

- (i) Strengthening the statistical capacity of developing countries to produce reliable statistics on food security, sustainable agriculture and rural development; and
- (ii) Encouraging the formation of a long-term vision for the development of agricultural statistical systems in developing countries.

The Global Strategy is based on three pillars, namely:

- Pillar 1: Establishment of a minimum set of core data required to meet current and emerging demands;
- Pillar 2: Integration of agriculture into the National Statistical System (NSS);
- Pillar 3: Establish suitable governance processes and build the necessary statistical capacity to ensure sustainability of agricultural statistical systems.

ACTION PLAN TO IMPROVE STATISTICS FOR FOOD SECURITY, SUSTAINABLE AGRICULTURE AND RURAL DEVELOPMENT IN AFRICA

1.3 Implementation of the Global Strategy

A Global Office has been established within FAO, in Rome, to provide the overall technical coordination of GS activities. At the regional level, work on the GS is supported by partners who provide technical and other assistance to countries. Specifically, the partners helping to implement the GS in Africa are:

- (i) The African Development Bank (AfDB), which was assigned the responsibility of providing technical assistance and governance to African countries;
- (ii) The United Nations Economic Commission for Africa (UNECA), which was assigned the responsibility of providing training; and
- (iii) The United Nations Food and Agriculture Organisation (FAO), which was assigned the responsibility of conducting research.

A regional action plan has been prepared to support the implementation of the GS in Africa . One of the recommendations of this Action Plan is that countries should develop a Strategic Plan for Agriculture and Rural Statistics (SPARS), which should be integrated into the NSDS and serve as a framework for the long-term development of agricultural statistics.

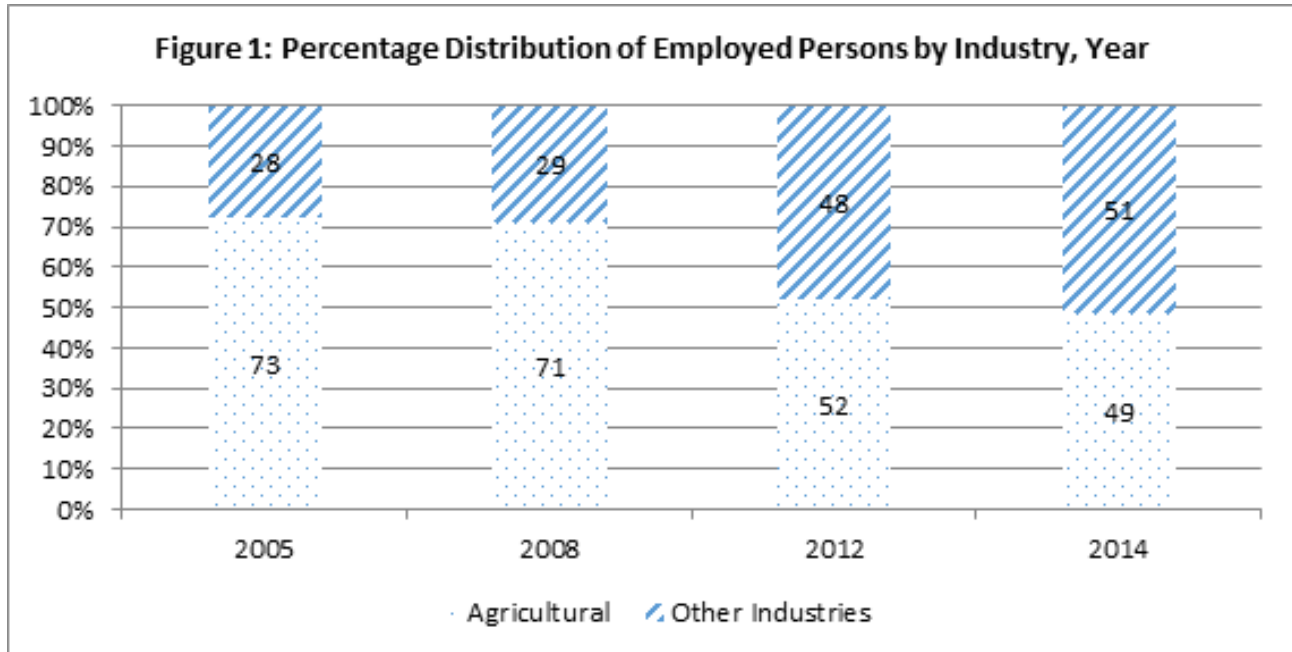
It is in pursuit of this goal that Zambia decided to address the weaknesses in its agricultural statistics system through the development of the SPARS_ZAM. Towards this end the Central Statistical Office (CSO) and the Ministry of Agriculture (MoA) requested for technical assistance from the AfDB for the preparation of SPARS_ZAM.

1.4 Policy Context and Rationale for SPARS_ZAM

Zambia covers an area of 752,610 sq km. Of this area, 34 percent is used for agriculture, and 7 percent is arable. The population of Zambia is approximately 15,000,000. The Government of the Republic of Zambia attaches great importance to the agricultural sector, as it is the single largest employer and makes a significant contribution to GDP. As such, there is absolute need to be regularly monitoring the performance of this sector, and this requires pertinent statistics.

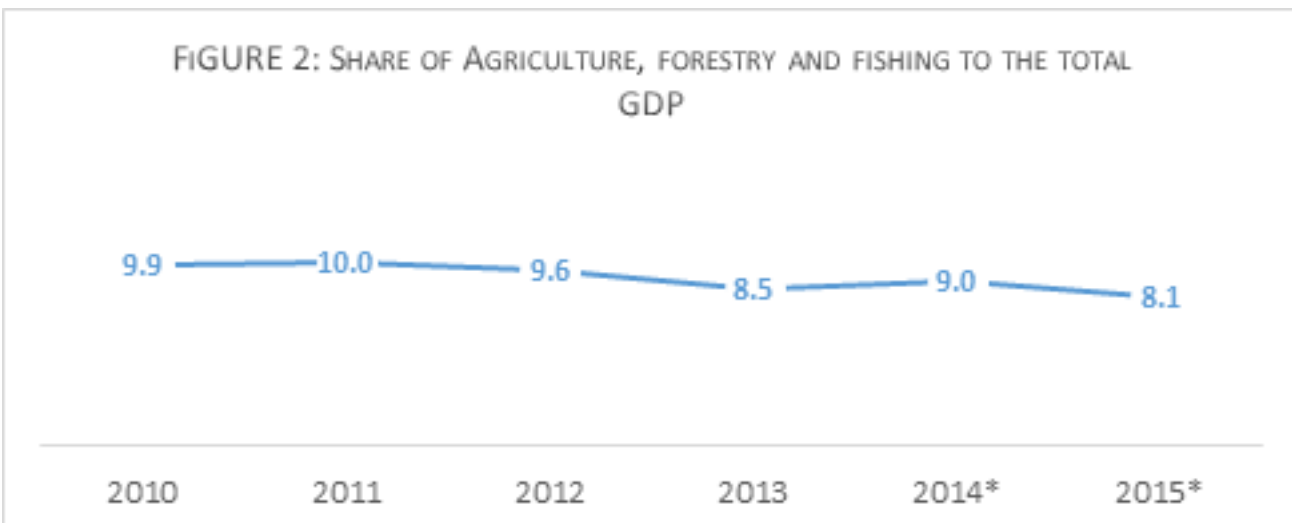
The Agriculture Sector has been recognised as one of the growth sectors in the Revised-Sixth National Development Plan. The sector accounts for about 50 percent of the employed population(R-SNDP, pp 8).

Figure 2: Percentage Distribution of Employed Persons by Industry



The sector also contributes a significant share to the Gross Domestic Product. It has been contributing an average of 9 percent to GDP from 2010 to date (Figure 2). Though the trend suggests a declining share for agriculture in the GDP, this is mainly due to rapid growth in other sectors of the economy. As the government is trying to shift the mainstay of the economy from the mining sector to agriculture, it is at the same time promoting diversification of the latter sector to move away from relying on a handful of crops to a wide variety of agricultural products such as livestock and forest products.

Figure 3: Share of Agriculture, Forestry and Fishing to the Total GDP



ACTION PLAN TO IMPROVE STATISTICS FOR FOOD SECURITY, SUSTAINABLE AGRICULTURE AND RURAL DEVELOPMENT IN AFRICA

The Government has always recognised the importance of the Agriculture Sector, and has over the years developed several policy documents to guide the development of the sector. These documents include:

- (i) Zambia Vision 2030
- (ii) Zambia Agricultural Investment Plan
- (iii) National Agricultural Policy 2004-2015, and
- (iv) Strategic Plan for Ministry of Agriculture and Livestock 2014-2016.

The development of the Strategic Plan for Ministry of Agriculture and Livestock was motivated by the expiry of the preceding plan, which covered the period 2006 to 2010. The need to cover emerging issues, change in the administrative structure of the Ministry, and the launch of the Comprehensive Africa Agriculture Development Plan (CAADP), all necessitated the development of a new strategy. Implementation of the Zambia Vision 2030 aims at lifting the Zambian Economy so that by 2030, the country will be “A Prosperous Middle Income Nation”. The agriculture sector is expected to play a very significant role in eradicating poverty, especially rural poverty and, as such, play a major role in the attainment of the Zambia Vision 2030.

Zambia has since independence carried out only two Censuses of Agriculture, in the 1970/71 agricultural season, and also between the years 1990 and 1992. Plans have been there for a long time to conduct another Agriculture Census, but all these have foundered on account of lack of resources. One of the objectives of the 1990-92 Census of Agriculture was to develop a national capability to build and manage an efficient agricultural statistical system. Findings from the sector assessment show that, 27 years on, this has not been achieved. In recent years, the need for ongoing assessment of the agricultural situation and crop forecasting has assumed greater importance to better manage the uncertain economic conditions. With the Government set to diversify the agriculture sector, there is a need to generate and provide relevant and reliable agricultural statistics in a timely manner to facilitate the monitoring of policy instruments and plans.

The Government of Zambia recognizes the importance of the agricultural sector in the economy and its contribution to eradicating hunger and malnutrition in the country. The Government acknowledges the weaknesses and gaps in the current agricultural statistics, as well as the need to improve statistical methodologies in order to provide more reliable and timely statistics. It also recognizes that agricultural data collection work needs to be better coordinated and that the agricultural statistics system needs to be integrated into the national statistics system. The government has welcomed the Global Strategy initiative and has fully supported its activities in Zambia. National stakeholders have actively participated in the IdCA process and this report strongly reflects national requirements and priorities.

1.5 SPARS_ZAM Methodology

In keeping with the 10 key principles behind the development of SPARS, SPARS_ZAM should be:

1. Backed by political support, nationally led and owned
2. Designed through a sound methodological approach (including M&E mechanisms)
3. Mainstreamed into the NSDS national process
4. Covering the entire agricultural and rural sector
5. Policy and results based with a quality fit for purpose
6. Taking into account what is in place and international commitments
7. Drawing on international statistical standards
8. Setting out an integrated and realistic SCB programme
9. Funded as a priority by governments for its implementation
10. Serving as a coherence framework for external assistance

SPARS_ZAM was developed in a fully inclusive and participatory manner. Key players involved in the agricultural statistical system in all sub sectors participated in all the stages, up-to and including the validation of this report. To adequately cover all the sub-sectors of agriculture and the complexity of the sector, five Sectoral Technical Working Groups (STWG) were established to support the development of SPARS_ZAM, as follows:

- STWG 1: covering (i) Food crops including horticulture, (iii) Cash crops, (iv) Food Security/safety/nutrition, and (v) Irrigation and inputs.
- STWG 2: covering (i) Livestock, (ii) Dairy, (iii) pastoralist livestock production system, (iv) Apiculture, (v) Emerging Livestock, and (vi) Animal health and Veterinary services.
- STWG 3: covering (i) Marine fisheries, (ii) In-land and aquaculture fisheries.
- STWG 4: covering (i) Forestry, (ii) Environment/Natural resources (related to agriculture).
- STWG 5: covering cross-cutting areas including but not limited to the Central Statistical Office (CSO), Trade, Prices, Statistical Capacity Building (SCB), Legislation /Legal framework/ Institutional development for agricultural statistics, Governance, Resource mobilization and Research.

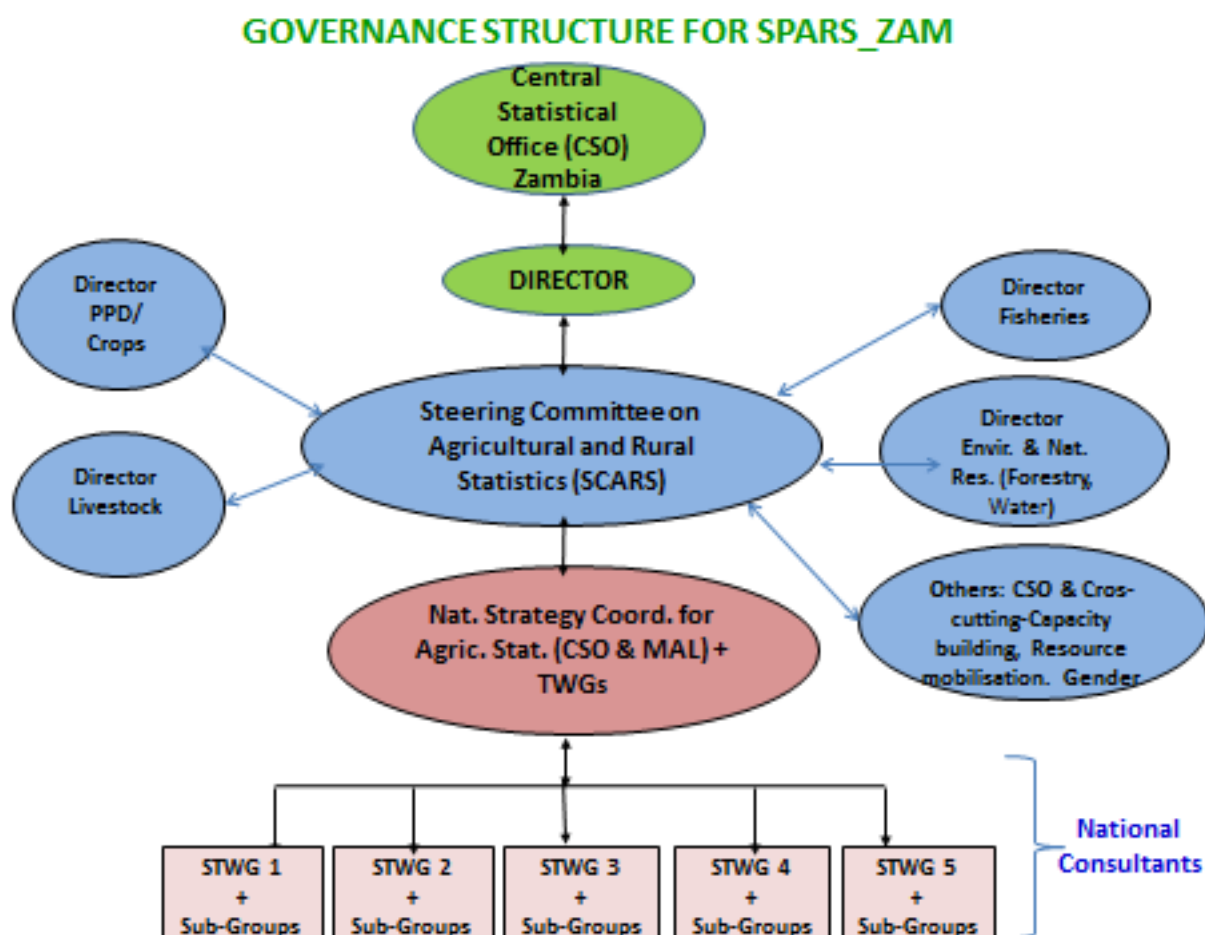
Each STWG could also call upon other structures/institutions to join them to make some contribution on specific questions and issues related to agricultural statistics (e.g. IAPRI/Universities, Zambia Central Bank, Zambia Revenue Authority, Meteorology, key users and Development partners.

A National Strategy Coordinator (NSC), based in the CSO, was appointed to coordinate the implementation of the Global Strategy with his Alternative in MoA. Five (5) resource-persons/national consultants and one international consultant were also recruited to support this work. Four of the national consultants were to provide support and guidance to the STWGs (one each for STWG 1 to STWG 4) to produce the relevant reports and sub-sector plans. The fifth national consultant was to

ACTION PLAN TO IMPROVE STATISTICS FOR FOOD SECURITY, SUSTAINABLE AGRICULTURE AND RURAL DEVELOPMENT IN AFRICA

coordinate the work of the other four consultants and, together with the international consultant, consolidate the sector reports into one overall document, leading to the production of SPARS_ZAM. It was agreed that a Steering Committee on Agricultural and Rural Statistics (SCARS) would be established to officially approve SPARS documents. This was necessary because the CSO is a government department under the Ministry of National Planning and Development and thus does not have a Board of Directors. The SCARS is an adhoc arrangement put in place to cover up for this, with members of the Committee appointed by the Permanent Secretary of the Ministry of Agriculture to perform the functions of a board in respect to the SPARS_ZAM development process. If, in the future, the CSO will be a semi-autonomous agency with a Board of Directors, that Board will legally undertake the function of approving documents on all statistics programmes including SPARS_ZAM.

Figure 4: Governance Structure for SPARS_ZAM



The African Development Bank supported the whole process financially and provided regular monitoring of the process through backstopping missions within the framework of the implementation of the Action Plan for Africa of the Global Strategy.

The first task of each STWG consultant was to identify the key stakeholders for the WG and to review relevant documents and literature. Information was then collected from key stakeholders using a structured questionnaire, one to one interviews and group discussions. Each STWG consultant prepared two reports, an assessment report and a planning report, both of which were signed off by the relevant STWG stakeholders. The fifth national consultant and the international consultant consolidated both sets of reports into an In-depth Country Assessment Report and the overall SPARS_ZAM, both of which have also been validated by a wider group of stakeholders.

The different phases of the development of the SPARS_ZAM were:

- Preparation of the Roadmap for the development of the SPARS_ZAM, 8-19th June 2015
- Initial validation of the Roadmap by stakeholders, 14th August, 2015
- Approval of Roadmap by SCARS, 20th August, 2015;
- Launching of SPARS_ZAM and the Assessment phase, 2nd March, 2016
- Preparation of assessment reports by Subsector Technical Working Groups (STWG), August, 2016
- Validation of Assessment reports by STWGs and preparation of the Consolidated Assessment Report, 28th Feb - 3rd March, 2017
- Validation of the Consolidated Assessment Report by all stakeholders, 9th March, 2017
- Adoption of the Consolidated Assessment Report by SCARS, 30th March 2017;
- Preparation of the Vision, Mission and Strategic goals and operational strategies of SPARS_ZAM, Development of implementation plans (action plans with budgets, monitoring and financing plans) by STWGs, April - October, 2017
- Technical review of implementation plans by STWGs and preparation of the Consolidated Strategic Plan (SPARS_ZAM), June 2018;
- Validation of draft SPARS_ZAM document by all stakeholders, June 2018;
- Adoption of the SPARS_ZAM by SCARS, AAA 2018

1.6 Institutional Environment

1.6.1 Administrative Structure

Zambia is a landlocked sub-Saharan country sharing boundaries with eight countries, namely Malawi, Mozambique, Zimbabwe, Botswana, Namibia, Angola, Democratic Republic of the Congo and Tanzania.

The country is administratively divided into ten (10) provinces, namely: Central, Copperbelt, Eastern, Luapula, Lusaka, Muchinga, Northern, North-Western, Southern and Western. Each province is further divided into districts, and there are 105 districts in all. With the Government now earnestly implementing the Decentralisation Policy, there is a rapidly growing demand for agriculture and rural statistics, especially from the Provincial and District planning departments. Lusaka is the capital city and the seat of government. The economy of the country is largely dependent on mining, but agriculture is a very important sector.

1.6.2 The National Statistical System

The National Statistical System (NSS) is the ensemble of statistical organisations and units within a country that jointly collect, process and disseminate official statistics on behalf of national government.

While the CSO is responsible for all national censuses and major sample surveys often in collaboration with line ministries, the CSO does not collect all national statistics. Some statistics are compiled by line agencies with support from their own statistics units. These statistics may be compiled from administrative records such as the management information systems in many line ministries (e.g. health, education, agriculture) or by carrying out their own surveys. Issues arise where different sources give rise to different estimates. This may reflect different methodologies and definitions or departures from statistical standards and best practice. For example, up to 1992/93 the Ministry of Agriculture and the CSO were carrying out separate and independent crop forecasting surveys, with different methodologies. The two surveys were not coordinated and the results from the surveys were usually at variance. Since 1993/94 the two surveys have been integrated and are carried out jointly by the MoA and CSO.

1.6.3 Legal Framework for the Collection of Statistics

The legal mandate for the collection of statistics is set out in Part IV of the 1964 Census and Statistics Act, Chapter 127 (previously Chapter 425) of the Laws of Zambia, which established the Central Statistics Office (CSO) as a department within the Ministry of Finance. The Act empowers the Director of the CSO to “generally organize a coordinated scheme of social and economic statistics relating to Zambia”. The Act provides for a centralized statistical service, empowering the Director, with the approval of the Minister, to collect statistics for Zambia or any part thereof with respect to such matters as may be prescribed.

Specific to agriculture, the Act sets out guidelines for the collection of statistics including: tenure; area (including fallow, pasture, woodland and land under water); area planted and yield by crop; number of trees, quantity and value of production; soil and water conservation and irrigation; livestock population, mortality, births and deaths, purchases and sales by breed type, age and sex;

farm buildings and equipment; workers and wages.

However, the CSO does not have the capacity to produce all the required statistics and the Act does not provide for an institutional arrangement for the National Statistical System (NSS) to facilitate the efficient and effective production of statistics, consequently current coordination and harmonisation arrangements are either non-existent or rather weak where they exist.

1.6.4 Legal Framework for Agricultural Statistics

There are more than 30 other pieces of legislation in the laws of Zambia relating to crops and other agricultural commodities which also implicitly provide for the generation of agriculture information for planning and decision-making purposes. These include the Agriculture Statistics Act (Chapter 229 of the Laws of Zambia) which provides for “the collection of agricultural statistics; to provide for the compilation and publication of statistics; and to provide for matters incidental to the foregoing”. Other Acts which include a component relating to agricultural statistics cover agricultural credit, food reserves, fertiliser and food, commodity specific acts (cotton, coffee, tobacco and dairy produce) and plant seeds, noxious weeds, pests and diseases. In the light of the new proposed Statistics Act, the statistical legislation within these Acts should be considered for amendment or even repeal.

In general, the assessment established that the statistical legislation for agricultural statistics is adequate across the sub-sectors (though there are particular issues for fishery statistics, see below). It was however noted that the legislation does not cover any institutionalised arrangements for the collaboration and sharing of data between organisations, making the coordination and harmonisation of agricultural statistics production in the country very weak. The current legal and institutional framework was considered to be outdated by not providing a congenial environment for the development of agricultural statistics and requires urgent repealing to embrace flexibility and dynamism in order to respond to the changing statistical environment.

There is a desire to increase penalties relating to compliance to release information, a particular issue for crop statistics relating to stock levels (required monthly for food security discussions) and trade, and to encourage the enforcement of registration and permit systems. This would improve the coverage of the statistical information provided, as a by-product, from these administrative systems. While Fisheries Regulations 2012 (SI No. 24 of 2012) requires the submission of returns of fish catches the larger part of the fishing community in Zambia are subsistence fishers, mostly with low education levels to the point that some are unable to read and write. Consequently, no fish catch returns are submitted by these fishers. There are also limitations in the legal provisions in that aquaculture producers and input suppliers are not required to submit returns on their harvests, fish fingerlings produced, fish feeds and also the cost of the inputs.

1.7 Review of National Strategy for the Development of Statistics

Zambia's first National Strategy for the Development of Statistics (NSDS) covers the period 2014-2018, and follows the implementation of a Strategic Plan for the CSO between 2003 and 2007.

The NSDS acknowledges that the 1964 Census and Statistics Act is outdated and has overtime become a constraint to statistical development in the country. Against this background, the NSDS proposes a revision of the Statistics Act, to be followed by the transformation of the CSO into a semi-autonomous agency, to be named the "National Bureau of Statistics", with a Board of Directors. The draft of the new Act spells out the revamped functions of the new institution to:

- Act as the principal source and custodian of official statistics in Zambia;
- Coordinate and harmonize the production of statistics in the National Statistical System (NSS);
- Collect and store, process, analyze and disseminate official statistics;
- Develop and maintain a comprehensive socio-economic national database; and
- Establish the Statistics Board to oversee the work of the Zambian Statistical Agency.
-

The revised Statistics Act is still to be passed by Parliament, though the NSDS was approved by Cabinet in May 2014.

While some agricultural statistical activities have been included in the NSDS, it is recognized that, due to the underdeveloped nature of statistical sector systems, full integration has not been possible. Sector systems will be gradually integrated as and when they are developed and formulated. As the formulation of the NSDS follows a bottom-up approach, the SPARS_ZAM will be the building-block for agricultural statistics. In this regard, a continuous close collaboration between the SPARS_ZAM and NSDS teams will be always indispensable to ensure integration of the agriculture sector into the national statistics system.

Stakeholders saw the implementation of the NSDS and enactment of the new Statistics Act as the way forward by providing a framework for strengthening statistical capacity, collaboration and coordination across the entire NSS. However, while virtually all key informants believed that a strategic planning approach for statistics for the whole country existed, some did not know what it was called. It was also considered that while crops, livestock and fishery statistics were appropriately mainstreamed in the NSDS, development plans for forestry, water and environment statistics were yet to be seen as having been covered in the overall plan.

The CSO is currently planning for the development of NSDS2, covering the period 2019 to 2023, the same time frame as SPARS_ZAM. The CSO is fully committed mainstreaming SPARS_ZAM into NSDS2, including all the agricultural sub-sectors.

1.8 Statistical Coordination Mechanisms

There is no formal institutional arrangement in place to establish User-Producer committees which can foster collaboration and understanding between producers and between users and producers across all the sectors, to ensure statistics are consistent, reliable, relevant and timely. The assessment established that the absence of a proper coordinating mechanism was one of the major weaknesses for the collection of agricultural statistics. The present Statistics Act does not vest the power to coordinate the NSS in any institution, an omission that equally affects the agriculture statistics system.

There is no mechanism to oversee the methodologies adopted to carry out statistical activities. This especially applies to statistics that are collected using administrative means. As a result:

- Data collection in different subsectors is planned in isolation and there exists disconnect between the producer and user needs;
- Consultation does not exist at a multi-sectoral level;
- There is a common tendency for individual department to keep their information in their respective databases without sharing it to the users;
- The national statistical system is not known and appreciated by many stakeholders.
-

There are examples of producer-user committees which used to exist - up to 2010, there was a statistics committee chaired by the Economic Management Department in the Ministry of Finance which met quarterly to discuss submissions from sectors on economic statistics. A User-Producer Committee for livestock statistics has existed, comprising government planning departments, civil society and NGOs, which was supported by the Zambia Social Investment Fund (ZAMSIF). Other coordination mechanisms have been ad-hoc, to be disbanded after having played their role e.g. the Inter-Ministerial National Census Committee.

There are also examples of collaborations in the collection of statistics, e.g. the Demographic and Health Survey is conducted by CSO in collaboration with the Ministry of Health and the Labour Force Survey is conducted by the CSO with the Ministry of Labour. For agriculture the Crop Forecast Survey and the Post-Harvest & Livestock Surveys are joint exercises conducted by the CSO and MoA while CSO and MFL collaborate on the Fish Catch Assessment Surveys. The Rural Agricultural Livelihoods Survey is an exercise undertaken jointly by the CSO, MoA and IAPRI. While these institutions collaborate on such exercises they will jointly discuss and agree the content and design of the questionnaires together, though usually there are no formal coordination mechanisms in place to encompass the views of other stakeholders.

Regional coordination exists for trans-boundary fisheries such as that provided by the Lake Tanganyika Authority (LTA) and a Protocol Agreement between Zambia and Zimbabwe on the management of the fisheries resources of Lake Kariba and trans-boundary waters of the Zambezi River.

ACTION PLAN TO IMPROVE STATISTICS FOR FOOD SECURITY, SUSTAINABLE AGRICULTURE AND RURAL DEVELOPMENT IN AFRICA

An example was given whereby priorities for the collection of crop statistics are driven by national food security decision making. As a result, commodities of economic importance, such as horticulture (e.g. tomato, onion, cashew nuts) that are not perceived to be directly impacting on food security have low priority. The creation of a User-Producer dialogue would go a long way in reviewing the prioritization of statistics to be collected.

1.9 Stakeholder Analysis

The main central institutions concerned with agricultural development and agricultural statistics are shown in Annex 1. Most of the institutions are located in Lusaka.

1.9.1 Central Statistics Office

The Central Statistical Office (CSO) is a department under the Ministry of National Development Planning (until 2015 it was under the Ministry of Finance). CSO's mission statement is to coordinate and provide timely, quality and credible official statistics for use by stakeholders and clients for sustainable development.

The CSO is headed by a Director and has four divisions namely Economic and Financial Statistics, Agriculture and Environment Statistics, Social Statistics, and Information, Research and Dissemination, each managed by a Deputy Director. Within the Agriculture and Environment Statistics division, there is an agriculture branch and an environment branch, each headed by a Chief Statistician. Prices statistics, External Trade statistics and National Accounts statistics, all important sources of information on the agricultural sector, are within the Economic and Financial Statistics division, while Labour Statistics and Geographic Information Systems come under the Social Statistics division

The CSO has offices in all the provincial headquarters, headed by Regional Statisticians, who carry out ongoing activities, such as consumer price collection. The CSO also has its own permanent field team to carry out data collection activities for censuses and surveys (if required this team can be supplemented by temporary recruits from a reserve list).

1.9.2 Ministry of Agriculture

The Ministry of Agriculture (until 2015 this was the Ministry of Agriculture and Livestock) has a mission statement to facilitate and support the development of a sustainable, diversified and competitive agricultural sector that assures food and nutrition security, contributes to job creation and maximises the sector's contribution to GDP.

The Department of Policy and Planning is headed by a Director and is divided into two branches, namely a Programme Planning, Monitoring and Evaluation Branch and a Policy Analysis and Statistics Branch. The later branch includes an Agricultural Statistics & Early Warning Section (ASEWS), headed by a Chief Statistician, as one of its two sections. The ASEWS is responsible for:

- Conducting crop forecasting and post-harvest surveys (conducted jointly with the CSO);
- Provision of early warning data and information for food security and timely planning and decision-making;
- Undertaking Vulnerability and Food Needs Assessment;
- Producing agricultural statistic bulletins and maintaining the agricultural database.

The Ministry chairs the National Stocks Committee which meets to discuss and recommend policy decisions and actions pertaining to levels of food stocks, especially for maize and wheat, held in the country. Members include the CSO, ASEWS, FRA, Zambia National Farmers Union, Millers Association of Zambia, the Grain Traders Association of Zambia, NGOs, UN and international development agencies. The Committee meets whenever there is a felt need, increasing the frequency of meetings when there are large staple food deficits or surpluses in the country.

The Agricultural Marketing Information Centre (AMIC) collates the wholesale and retail prices of agricultural commodities and inputs collected by their own staff in the provincial centres.

1.9.3 Ministry of Fisheries and Livestock

This Ministry was created in 2015 and has seven departments including Livestock Development, Veterinary Services and Fisheries. The Ministry also has a Policy, Planning and Information Department which includes a small statistics unit though these statisticians undertake various non-statistical tasks. While there are plans to establish an upgraded statistics unit, there is currently no single portal for the collation and management of statistics within the Ministry.

For livestock the National Livestock and Epidemiology Information Centre, which is within the Veterinary Services Department, provides a statistical service. A Fisheries Information Management Unit in the Department of Fisheries uses extension staff in the districts to collect data.

1.9.4 Lands, National Resources & Environment

The Ministry of Lands Natural Resources and Environmental Protection (MLNREP) is responsible for the formulation and implementation of land administration, forest management and environmental protection policies. The Planning and Information Department has overall responsibility for the development, monitoring and evaluation of policies, legislation and programmes.

ACTION PLAN TO IMPROVE STATISTICS FOR FOOD SECURITY, SUSTAINABLE AGRICULTURE AND RURAL DEVELOPMENT IN AFRICA

The Forestry Department oversees the management, protection, and conservation of forests to ensure sustainable utilization and management for socio-economic development while the Environment and Natural Resources Management Department is responsible for the coordination of the implementation of multilateral and bilateral environment and natural resources programmes and projects.

Zambia Environmental Management Agency is responsible for the formulation of policies on all aspects of the environment and the Climate Change Secretariat, now part of the Ministry of National Development Planning, facilitates the coordination of all climate change activities being undertaken by government, the private sector and cooperating partners in order to achieve the aims and objectives of the National Climate Change Response Strategy.

The Water Resources Management Authority, under the Ministry of Water and Energy, has the responsibility to preserve and protect Zambia's ground and surface water resources and regulate the abstraction, allocation, use, development and management of water in a sustainable manner. The Meteorological Department under the Ministry of Transport and Communication maintains a network of surface and upper air stations to monitor various weather elements. This meteorological data is then processed and analysed for use in the planning of economic development and the sustainable exploitation of natural resources.

1.9.5 Indaba Agricultural Policy Research Institute (IAPRI)

IAPRI's mandate is to utilize empirical evidence to advise and guide the Government of Zambia and other stakeholders on agricultural investments and policies. This is achieved through three core activities:

- Producing trusted, impartial, and high-quality research on agricultural, food, and natural resource policy issues in Zambia and the wider southern Africa region;
- Integrating research findings into national, regional, and international programs and policy strategies to promote sustainable agricultural growth and cut hunger and poverty in Zambia; and
- Supporting the development and strengthening of capacity for policy research, analysis and outreach of public and private institutions in Zambia.

IAPRI also collaborates with the CSO, MoA and MFL to implement the Rural Agricultural Livelihoods Survey, a panel survey providing broader and more detailed information on rural household livelihood activities and outcomes than can be obtained from the PHS and CFS.

1.9.6 Stakeholders with other Research, Academic and International Institutions

Other policy research institutions consulted include the Policy Monitoring and Research Centre (PMRC) a public policy think-tank established to promote public understanding and to encourage and facilitate debate on social and economic policy issues critical to national development.

The objective of the Zambian Agricultural Research Institute is to develop and adapt crop, soil and plant protection technologies and to provide a high quality, appropriate and cost effective service to farmers.

Staff from two schools at the University of Zambia, Veterinary Medicine and Agricultural Sciences, were also involved in the consultations. Stakeholders with international organizations included the Centre for Forestry Research (CIFOR), Famine and Early Warning Systems Network (FEWSNET), World Fish (whose mission is to reduce poverty and hunger by improving fisheries and aquaculture), and the United Nations Food and Agricultural Organisation.

1.9.7 Zambia National Farmers Union and Affiliated Organisations

The Zambia National Farmers Union (ZNFU) is a membership based organization, with countrywide coverage, representing the agriculture industry. Members are currently categorized into District Farmers' Associations; Commodity-based Associations; Corporate Farming Businesses; the Agribusiness Chamber; and Associate Members. Commodity based associations consulted include the Dairy Association, Poultry Association, Forest Fruits, Small Livestock Association and the Timber Association.

The ZNFU is a lobbying organisation on behalf of its members and has a Research and Development section which uses statistics to carry out its function. It has in the past carried out its own agricultural production and stock surveys, but these have been discontinued with the organisation accepting the results from the CSO / MoA surveys.

1.9.8 Other Civil Society Stakeholders

Other stakeholders consulted include the Community Based Natural Resource Management (CBNRM) forum (a platform for community based natural resource management discourse, debate and development in Zambia).

Chapter 2: Evaluation of the National Agricultural Statistics System (NASS)

2.1 Introduction

This chapter answers the question 'Where are we now'? Before embarking on developing this Strategic Plan for Agriculture and Rural Statistics, a detailed assessment was undertaken of the present status of the agriculture and rural statistics. The assessment was carried out through literature reviews, by administering a questionnaire to a number of stakeholders, having face-to-face diagnostic interviews, having group discussions with persons in each of the key sectors identified for purposes of developing this strategic plan. Each STWG came up with its own assessment, and these were consolidated into an overall document, 'Report of the In-depth Country Assessment for Zambia' CSO, March 2017, which is a key input into the process of defining the Strategic Goals, Objectives and Activities for the SPARS.

This chapter provides an assessment of the current capacity to produce agriculture and rural statistics assesses current data collection activities and reviews user needs and data gaps. Finally the main findings from a SWOT analysis are presented.

2.2 Assessment of Capacity to Produce Agriculture & Rural Statistics

2.2.1 Human Resources

Almost all institutions contacted indicated they did not have adequate human resources for statistical work (there is currently a freeze on recruitment of new staff). There was a substantial difference between the establishment register (the number of posts approved by Cabinet), staff assignment (the posts with funding authority from the MoF) and the number of posts currently filled. However, they generally indicated that the staff they had were skilled, experienced and qualified, except for the environment sub-sector.

The CSO and MoA both have dedicated agricultural statistics units. The Agricultural Statistics Section in the CSO has 6 professional and 4 support staff, which after a recruitment exercise 2 years ago is considered adequate. The Agricultural Statistics and Early Warning Section in MoA has a staff complement of 10 officers (9 professional) who are responsible for the execution of the Crop Forecast and Post-harvest survey as well as other specialized surveys. The section is also responsible for analysing secondary data such as formal trade data from the ZRA/CSO Asycuda system.

For the CFS and PHS surveys the MoA deploys its extension officers to make up 50% of the field team while the CSO calls upon its own permanent field team of data collectors.

Currently the MFL does not have a statistics unit though there are plans to establish one - there are statisticians currently in the Department of Policy, Planning and Information, but with staff shortages their responsibilities go beyond statistics. The National Livestock Epidemiology and Information Centre (NALEIC) undertakes regular statistical analysis of the disease data from all the districts in the country and generates epidemiological memos and other special reports for policy makers in the MFL. It has a staff establishment of nine, of which only four positions are filled.

The Fisheries Information Management Unit in the Department of Fisheries uses extension staff in districts to collect data. The unit has only five positions filled out of nineteen on its establishment register. There are 133 capture fisheries extension staff in the Districts compared to a register of 650 (20%), and 41 aquaculture extension officers compared to an establishment of 493 (8%).

Only forestry has a dedicated statistics unit in the natural resources sub-sector; lands, water, environment and meteorology all carry out statistical work using other staff. The numbers of staff engaged in the production of statistics vary from 5 in forestry to 25 in meteorology all of whom have degrees or diplomas. Experience, skills and qualifications were mostly lacking in the Environment sub sector.

Insufficient staff numbers adversely affects data collection, particularly for administrative statistics such as market statistics (e.g. sale volumes and prices). In the aftermath of low recruitment levels by government, coupled with staff attrition and retirement, the numbers of extension officers (for both crops and fisheries) and veterinary officers have dwindled. Officers based in districts are often required to cover large areas and large numbers of households. For instance it is generally stated that the veterinary officer to farmer ratio stands at 1:3,000 farmers compared to the recommended figure of 1:400 farmers. In almost all the districts it is common to find more 'camps' that are unmanned as those that are manned.

2.2.2 Infrastructure, Equipment, Information Technology

The MoA and CSO have transitioned from the use of paper questionnaires to using tablets for data collection in the field (CAPI-Computer-Assisted Personal Interview). This has huge led to significant savings in time and resources, though challenges remain at the data analysis stage, including the need for additional computers across all sub-sectors.

Currently the collection of livestock and fisheries data from field stations is paper-based as personal computers are virtually non-existent. The data is relayed to the district where it is entered into Excel spreadsheets. The move away from hard copies to the use of PCs for data storage is raising data safety/ security issues whenever computers crash or are affected by serious computer viruses. Further the office buildings do not always have Local Area Networks or functional internet facilities. In the natural resources sector all institutions reported their IT equipment to be inadequate while the environment and lands sub-sector had problems acquiring appropriate software. All the institutions had Local Area Networks.

ACTION PLAN TO IMPROVE STATISTICS FOR FOOD SECURITY, SUSTAINABLE AGRICULTURE AND RURAL DEVELOPMENT IN AFRICA

There are a number of statistical software used by the various institutions, but prominent among these are MS Excel, STATA and SPSS. Other software used include GenStat, RATS, GAMS, Surveybe, ArcGIS, CPro, SAS and MS Access and some sector specific packages e.g. Pasgear for fisheries, CLICOM, CLIMSOFT, SAIKU, ASPRO and HYDSTRA for natural resources. SPSS is the main software used for data analysis. However, the high cost of purchasing this and other proprietary software was an issue raised by many institutions. The lack of access to analytical software (including GIS software) negatively affects the timely production of quality information.

Transportation is an issue across all sectors. For surveys with small sample-sizes, or for routine data collection exercises, the CSO fleet of pool vehicles is usually sufficient. On those occasions when the CSO needs more vehicles, it borrows from other government ministries, or pools resources with the client ministry. The MoA is the main source of transport for data collection during the crop surveys, though this can be a challenge due to competing priorities at the district level.

Though it is government policy to provide motor-bikes to all camp staff, not all veterinary officers have motorized transport, making it difficult to access all livestock farmers on a regular basis. In the fisheries sector vehicles, boats, engines and camping equipment are inadequate and are usually shared between extension, research and training units. In the natural resource sub-sector all institutions apart from forestry, who had procured vehicles recently for the national forest assessment, do not have sufficient vehicles to do statistical work.

The CSO Head Office has recently moved into newly built offices. The CSO provincial offices are in rented buildings, mostly from the National Pension Scheme Authority (NAPSA), and, in most cases, require some renovation. Officers in the veterinary camps do not have offices to operate from (their houses double as offices), nor office equipment, e.g. computers and printers. Fisheries officers in the districts share their offices with other government departments while offices for staff from the natural resources sub-sector require renovation.

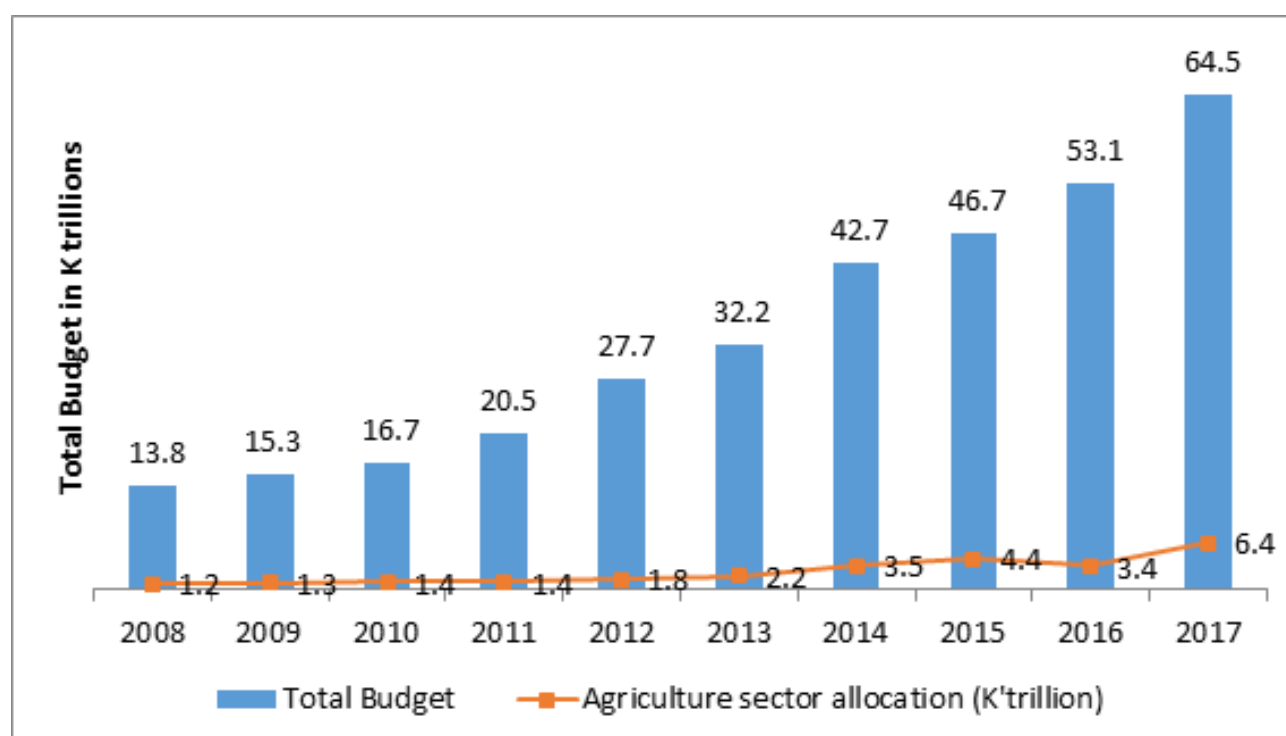
2.2.3 Financial Resources

The Crop Forecast Survey is relatively well resourced compared to the Post Harvest and Livestock Survey (the PHS was not carried out in 2015/16 due to resource constraints). For 2017, the CFS survey had an approved budget of USD 700,000. On the other hand, the PHS had a limited budget of USD 80,000 and, as such, implementation was constrained.

The Government funds ad-hoc surveys which arise from time to time but does not have enough resources to finance all agricultural data collection. For example, there is need to conduct the Fisheries Catch Assessment Surveys three times in a year and for all natural water bodies, in order to come up with meaningful estimates. However, funds can only suffice for the collection of data from one or two water bodies, once a year. Some of the challenges the CSO faces with funding stem from the fact that, being a department under the Ministry of National Development Planning, it shares

the budgetary allocation that is given to the parent Ministry with the other departments, and there is usually not enough to go around

Figure 5: Total National Budget & Allocation to Agriculture Sector, 2008-2017



There is no dedicated budget line for data collection in the MFL. However, with the establishment of the Department of Policy, Planning and Information, this picture is about to change. Though a National Livestock and Aquaculture Census was included in the 2017 National Budget, the money apportioned for the exercise was only sufficient for a large scale sample survey (the budget approved was USD 5.6m, by way of comparison the 2010 Population and Housing census cost USD 53m).

The Department of Fisheries has a dedicated budget for the Fisheries Information Management Unit. In 2016 this was USD \$300,000, around 15% of the total budget for the Department. However the actual release is usually only 25% to 55% of the allocated budget. Some fisheries do receive support from projects funded by development partners e.g. Tanganyika which has benefitted from the ADB and Kariba from FAO.

Financial resources to support the generation of statistics for natural resources are generally inadequate. The institutions do not have dedicated budget lines for statistical work. Where statistical work is funded it is within the budgets of many different activities e.g. in forestry, the statistics are funded through the budget line of an array of activities covering forest protection and management, and is considered to be less than 20% of requirements.

2.2.4 International Support

Overall donor support for agricultural statistics has been elusive. The last Census of Agriculture was done in 1991-92, so the holding of another is long over-due. The CSO has a project proposal, though of the donors who have been approached for assistance, the FAO has shown willingness to help with some aspects, others are yet to respond.

The Forestry Department has conducted two national forest assessments in 2006 and 2014 under the auspices of the Food and Agriculture Organization (FAO) with financial support of the Government of Finland.

A number of CSO staff have attended short-term training in agricultural statistics, under the auspices of UNECA, FAO, SADC and AfDB in particular. One member of staff will go to Tanzania 2017 to study for a Master's Degree in Agriculture Statistics.

The CSO also runs (now occasionally) an In-Service Training Programme for sub-professional officers. The programme accepts participants from the entire National Statistical System. The last two times this programme has been conducted, it was with the support of the ODA (Overseas Development Agency, the predecessor of DFID), in 1994, and JICA (Japanese International Development Agency), in 2007-2008. (the Government also contributed funds for the upkeep of the trainees, in both cases). The trainees in this programme were given grounding in theoretical as well as official statistics. The JICA-supported programme also had a component for training Professionals in Official statistics, and this was appreciated by the trainees.

2.2.5 Agricultural Statistics Capacity Indicator

The capacity to produce agricultural statistics is measured by the "Agricultural Statistics Capacity Indicators (ASCI)" calculated biannually by AfDB. The ASCI is a composite indicator which measures the development of the NASS. The ASCI was estimated at 55.4% for Zambia in the 2017 reference year, up from 51.1% in 2015 and 49% in 2013. Zambia's ASCI rating is currently below the average rating for African nations (57.2% in 2017).

- Looking across the dimensions of the ASCI, the following conclusions can be made:
- The level of the Prerequisite Dimension (institutional infrastructure) increased from 41.3% to 50.4% between 2015 and 2017, though it is well below the African average of 70.3%.
- The level of the Input Dimension (reflecting the availability of resources) fell slightly between 2015 and 2017 from 35.3% to 32.3%;
- The level of the Throughput Dimension (reflecting statistical methods and practices) increased from 52.9% to 59.3% between the two reference years;

- The level of the Output Dimension (reflecting the availability of statistical Information) remained fairly constant (75.0% and 75.8% in 2015 and 2017 respectively) and is the dimension on which Zambia scores the highest.

2.3 Assessment of Current Data Collection Activities

Users of the NASS were asked to rate attributes of the available statistics, such as timeliness, relevance, methodological soundness, accuracy and reliability, accessibility, presentation, meta-data and micro-data and to give an overall rating of data quality.

2.3.1 National Agricultural Census

Agricultural Censuses have been conducted in 1970/71 and 1991/92. The Housing and Population Censuses of 2000 and 2010 have included a short agricultural module with a number of 'yes / no' questions to identify whether the household had been involved in any agricultural activities in the 12 months leading up to census day. These questions were included to establish a new sample frame to provide more accurate estimates of agriculture and livestock production.

A few questions on the crops sub-sector have been included on the questionnaire for a planned Livestock and Aquaculture Census in 2017.

2.3.2 Crop Statistics

The CSO and MoA together conduct two major annual surveys to collect crop and agricultural statistics. These are the Crop Forecasting Survey (CFS), typically conducted in the first quarter of the year (though exact timing depends on the status of the crops) and the Post-Harvest and Livestock Survey (PHS) conducted in the last quarter of the year. These surveys typically run for 4 to 5 months from start to completion and timeliness is a major challenge. The PHS survey is the more detailed survey. The data quality from both surveys is rated 'good' by stakeholders for crop statistics.

ACTION PLAN TO IMPROVE STATISTICS FOR FOOD SECURITY, SUSTAINABLE AGRICULTURE AND RURAL DEVELOPMENT IN AFRICA

Table 1: Published Confidence Intervals for Crop Production Estimates

Crop (000 metric tonnes)	Production Estimate	Coefficient of Variation	Confidence Interval (+/- 000 MT)
Maize	2,710	2.74%	146
Sorghum	138	11.13%	3
Rice	27	15.72%	8
Millet	30	6.11%	4
Sunflower	59	5.69%	7
Groundnuts	128	4.10%	10
Soya beans	65	9.51%	12
Seed cotton	112	6.71%	15
Irish potato	3	29.40%	3
Virginia Tobacco	3	27.80%	2
Burley tobacco	6	39.05%	5
Mixed beans	45	6.26%	6
Bambara nuts	5	15.98%	2
Cowpeas	10	12.09%	2
Velvet beans	<1	2.19%	<1
Sweet potatoes	230	6.60%	30
Pineapples	8	39.78%	8

Source CFS 2015/16

An examination of confidence intervals for crop production estimates (Table 1) shows that the survey works well for crops where production is fairly well distributed across the population and less well for other crops.

The estimation of production for perennial crops such as cassava has historically been a challenge, as harvesting is a continuous exercise throughout the year. The current methodology for estimating cassava production is to assume a constant yield of 11.7 metric tonnes per hectare throughout the country. This estimate was established by a Root and Tuber Improvement Project research during the 1980's.

While the revision of results that are generated from the CFS and PHS surveys is not possible, Government does sometime use industry generated statistics in place of the survey estimates. This is particularly the case where survey estimates have very wide confidence intervals. The tobacco industry through the Tobacco Board and Tobacco Association generates statistics on national production of Virginia and Burley Tobacco from their administrative records. This data is rated 'good'. When national production estimates from the Cotton Board of Zambia, based on processing returns from cotton Ginneries (rated 'good'), are compared to estimates generated by the CFS, it seems likely that, in recent years, the CFS underestimates production.

For sugar and coffee producers and growers associations exists and maintain records from which production estimates can be made – all rated ‘good’ for quality. While the Zambia Export Growers Association (ZEGA) is the main industry association representing the interests of commercial growers and exporters of horticultural products statistics on production and export only cover its members. Similarly estimates for the production for soya beans made by ZNFU are only collected from ZNFU members.

2.3.3 Livestock Statistics

In Zambia, the core list of livestock includes cattle, sheep, goats, pigs, horses, donkeys and poultry (i.e chickens, ducks, quails, rabbits, turkey, guinea fowls). While the core list of livestock products includes meat, milk, eggs, skins, hides and horns.

It is estimated that by far the most important current source of livestock statistics are administrative records (accounting for about 71%), followed by surveys (27%) and censuses (2%).

For MFL, the administrative approach entails a 100% enumeration of all the households in each veterinary camp by a government camp extension officer. Data collected includes outbreaks of livestock diseases and other livestock health-related indicators; livestock population; production of livestock and livestock products; trade in live animals and livestock products. However not all veterinary camps are manned and most veterinary camps have vast catchment areas (for example, Chilanga district, with an approximate area of 1,500 km² is manned by only 5 camp extension officers). It is unrealistic to expect a camp extension officer to canvass each and every livestock raising household in the veterinary camp. This leads to lack of precision of the generated estimates. As a result data quality assessments for administrative data are a combination of ‘good’ and ‘fair’. Some livestock statistics are available from the PHS carried out annually at the end of each agricultural season. However this survey is based on a sampling frame of the general population and the resulting livestock estimates, particularly for cattle, have large confidence intervals (there may also be issues around the accuracy of farmer responses as the cattle numbers produced by the survey seem to be underestimates). Survey data from the PHS is rated ‘fair’ for livestock statistics. The last Census of Agriculture was done in 1991/1992 whilst no Livestock Census has been done since independence. A smaller National Sample Livestock Census was done in 2010 and covered two districts only, namely Monze and Namwala. Preparations are underway for carrying out the first ever Livestock and Aquaculture Census in Zambia. The Government has dedicated funds and other development partners have pledged to contribute resources.

2.3.4 Fisheries Statistics

Administrative data includes the registration of boats, fishers and fish farmers, catch returns from Kapenta (a type of sardine), semi industrial fishing and sport fishing and internal and external trades. These statistics are rated either 'poor' or 'fair' reflecting incomplete recording due to lack of resources (staff and financial –the omission of estimates based on illegal activities also contributes to under reporting).

Statistics on formal imports and exports of fish and fish products are rated 'good' but informal cross border trade goes unrecorded – it is known that large volumes of fish imported into Zambia is informally exported to Democratic Republic of Congo (DRC) by cross border traders.

Fisheries frame surveys are undertaken to create sampling frames for capture fisheries and for aquaculture. A Frame Survey is a census-based approach in which data is collected on all fishing gear and crafts, fishing villages/camps and also aspects of the demography of the fishing community. The overall objective is to provide information on the composition, magnitude and distribution of fishing effort; facilities and services in fishing villages to guide development and management of the resources of a fishery. Frame Surveys are conducted every five years for each fishery and have been on completed on schedule in recent years. The data provided rated 'good' when conducted though the frequency of these surveys needs to be improved.

Catch Assessment Surveys (CAS) have been undertaken on all the major fisheries in Zambia since 1978. The survey is used to estimate the catch by species with a corresponding fishing effort. The data from CAS is used to derive important indicators used to evaluate the performance of a fishery. The changing fish species composition over seasons and years as well as fish sizes also helps managers guide and plan for management measures focused on fish conservation and sustainable exploitation. Catch Assessment Surveys are expensive to conduct. The frequency of carrying out these surveys is low and though the data can be of good quality, sometimes the coverage is incomplete due to inadequate resources both human and financial.

2.3.5 Forestry and Environment Subsector:

The existing data sets are generally for the use of the subsectors institutions and are sourced from administrative records. The data sources are assessments and /or sample measurements mainly due to the vastness of natural resources. Most of the data collected in these sub-sectors is of good or acceptable quality.

In terms of collection methods, most institutions use the questionnaires, key informant or focus groups. They adhere to internationally accepted standards and recommendations from the United Nations. In Forestry for example, the national forest inventory incorporates the REDD+ parameters necessary to report to the United Nations Framework Convention on Climate Change (UNFCCC).

Control of data quality control is an important part of the process in the collection of data by some institutions. In the water subsector, data verification exercise is done by hydro-technicians when they receive data from the field. In forestry assessments, a quality assurance team, composed of experts, follow the field assessment teams to carry out independent measurements to compare with the data collected and correct any errors.

Generally, the subsectors in the land, water, forestry and environment sub-sectors do not have a solid infrastructure for data and information sharing and dissemination. Periodical publications and reports appear to be the common format of dissemination largely covering their respective mandates.

2.3.6 Prices

There are three levels of price collection for agricultural commodities - producer prices (farm-gate); wholesale prices and retail prices. Data quality for price collection carried out by the CSO is rated 'good' or 'fair'; the quality of price statistics in the MOA is rated 'poor' due to lack of staff and finance. The only national source of farm-gate prices is the PHS. The information is collected for commodities that the sampled farmers indicate that they have sold over the year. The data collected includes 'month of sale', therefore it is possible to retrospectively construct a monthly producer price table. Wholesale prices are supposed to be collected at district level by district marketing development officers (DMDO) from the MoA. The officers should visit key sample markets once per week to collect the prices. The data is then entered into the price database. Districts that have these officers have been collecting this data, however, aggregating this data into a national database has proved to be a challenge.

The MOA disseminates weekly wholesale price statistics based on price collection in 2-3 markets within each of the 10 Provincial centres.

The CSO collects retail price data every month from selected districts of the country. Aggregate national price changes for selected commodities of wide interest are included in the monthly publication. Retail price statistics for food commodities are an important input in monitoring national food security. Weekly and monthly food price movements are used at the local, national and regional level to inform policy makers on availability and access.

2.3.7 Trade Statistics & Informal Cross Border Trade

Zambia uses the Harmonized Commodity Description and Coding System (HS) of tariff nomenclature for formal trade statistics. This data is generated by the Zambia Revenue Authority (ZRA) and the database is shared with the CSO on a monthly basis. The CSO provides the agricultural trade data to the MoA for further analysis on specific agricultural trade indicators. Stakeholders considered the quality of this data, captured through the formal declaring of import and exports to be 'good'. However there was concern, expressed by stakeholders across the agricultural sectors, that informal

border trade was significant and this was not being captured, hence an overall grading of 'fair' for trade data for agricultural commodities.

FEWSNET and the World Food Programme (WFP) established a system for collecting informal cross-border trade statistics for food commodities such as maize, wheat flour, beans in the COMESA region. This activity has been formally handed over to ACTESA, a COMESA affiliate that currently appears to be non-operational.

2.3.8 Data Processing, Data Management and Quality Controls

The CSO and the MOA have recently completed a roll out of tablets to replace paper questionnaires for the CFS using the World Bank Survey Solutions CAPI software. This has greatly reduced the time required to collect data and has also eliminated the need for data entry. The data is transmitted to Lusaka for data cleaning and consistency checks using SPSS.

Once the data cleaning and verification is concluded and finalized, the National Food Balance Sheet (NFBS) is generated by the ASEWS, in collaboration with CSO. A Stocks Committee chaired by the Permanent Secretary in the MoA reviews all the different data inputs required for generation of the food balance sheet, including submissions from industry stakeholders. Once consensus is reached, the food balance sheet is finalized and a press statement is released by the Minister of Agriculture. Survey reports for the PHS are available from the CSO. Production of reports for the 2011/12 to 2014/15 crop seasons was initially delayed by lack of funds, but these are now available.

The use of electronic equipment (PDAs, tablets, smart-phones, etc.) to collect administrative agricultural data in the field is very limited. Primary data collection is usually on paper and the information is then captured using desktop or laptop computers at a central point, usually at district or provincial level. This data, usually in Excel, may then be partially compiled to give some basic summary indicators. In order to obtain national indicators, the district or provincial level datasets are transmitted to the national office for aggregation, analysis and dissemination. The challenge is that some districts and field stations do not submit all the data required and this creates serious statistical gaps during analysis at national level. Raw data has also been lost in some districts (computer crashes, viruses and occasionally theft).

2.3.9 Dissemination

Most organisations disseminate their results through paper publications, bulletins and brochures. The CSO releases survey results through workshops and media events. That notwithstanding, a lot of statistical data is kept in raw form within organisations and only a small portion of the data collected is processed into indicators that can be monitored over time. There is very limited documentation of important data collection outputs despite the considerable amount of resources used to collect the information.

Field programme reports, quarterly and annual reports are used for dissemination of administrative data, though these may not be accessible to the public. This lack of dissemination is largely due to inadequate staff numbers coupled with poor skills and equipment required for data processing and archiving.

A few organisations use their website such as www.iapri.org.zm, www.zari.gov.zm, www.agriculture.gov.zm, www.zamstats.gov.zm and the CountrySTAT website, as well as the Data Portal (<http://zambia.africadata.org> or <http://zambiainfohighway.knoema.com>) for dissemination. The Data Portal was developed with the help and support of the AfDB under the Africa Information Highway (AIH) programme. The CSO also has a Dissemination Unit supplying hard or soft copies of reports. The Dissemination Unit also coordinates the production and release of special request items /data from users (such as specific tables that may not have been produced in any report).

2.3.10 Challenges

Challenges faced by stakeholders with regards to the data they produce include:

Table 2: Issues and Challenges of Statistics Data Collection

Issue	Challenges
Strategic (leadership, Policy, legal advocacy)	Limited commitment from top management Lack of suitable organization structure and system Insufficient appreciation of statistics by managers and decision makers Unwillingness by some respondents to share information.
Capacity(human, Physical and ICT)	Inadequate numbers and inadequately trained personnel; this adversely affects the collection of administrative statistics where such officers are required to be present on the ground most of the time for enforcement, registration or data collection; Lack of funds for training and capacity building; Lack of a website which would avail an online information platform; Inadequate expertise in analytical tools
Statistics Production (data collection, processing, analysis, report)	Low sampling intensity Lack of adequate budget to support data collection affecting both surveys and administrative data collection (including the late release of funds from Treasury). This includes a lack of transport, camping equipment, computers (including tablets for data capture in the field); Absence of disaggregated data at the lowest level of administration Lack of analytical tools (such as GIS software)
Dissemination	Interpretation of technical data for general public Inadequate manpower Inadequate resources to support dissemination Inadequate communication infrastructure

One technical issue encountered is the representativeness of the CSO/MoA sampling frame for the sub-sectors of the agriculture sector. The sampling frame seems to represent the crops subsector better than it does the livestock sector. As such, the PHS statistics on crops tend to be more reliable than those on livestock.

2.4 Assessment of User Needs & Data Gaps

In assessing their satisfaction with the NASS, users were asked how statistics were used in their operations, and whether the statistics they needed were available. This identified significant data gaps in virtually all sectors. Users want statistics on a number of variables that are not currently being produced. This would suggest the existence of a hunger for data.

A summary, by sub-sector, of the main findings is given below. Information needs identified by the cross cutting working group have been included under the appropriate subsector.

2.4.1 User Needs – Crops subsector

The main user needs for crop statistics in Zambia relate to: Production, Prices, External trade and to a lesser extent consumption statistics.

Crop statistics are used to make national food security decisions. The National Food Balance Sheet utilizes various types of statistics namely, production statistics, statistics on physical stock levels, consumption statistics, post-harvest loss statistics and trade statistics. It needs input data from the CFS and also utilizes information from other sources such as CSO population growth estimates, industrial utilization of staples, historical per capita consumption patterns etc. The Food Reserve Agency concludes its purchase schedule for the marketing season after the final crop forecast and food balance information is finalized.

Detailed household level consumption statistics for agricultural commodities are generated by the Living Conditions Monitoring Survey (LCMS). The survey uses the diary method to record consumption of individual commodities, including food, at the household level. The National Food Balance sheet converts this information into kilo-calories to derive the requirements for maize, the main cereal consumed in Zambia. The status quo method, which looks at imports and exports, is used to measure apparent consumption for wheat, rice, and potatoes that are also included in the national food balance sheet.

Retail price statistics for food commodities are an important input in monitoring of national food security. Weekly and monthly food price movements are used at the local, national and regional level to inform policy makers on availability and access. At the macro-level, crop production statistics are used in National Accounts for the calculation of Gross Domestic Product (GDP).

2.4.2 User Needs - Livestock Subsector

With the diversity and multiplicity of stakeholders' interests, endless data could be collected. However, scarce resources entail that the collection of livestock statistics should be prioritised and cover the following indicators / datasets]:

- a) Livestock inventory; the collection of livestock numbers
- b) Livestock slaughters divided into two categories:
 - I.) Primary products, coming directly from the slaughtered animals, including meat, offals, raw fats, fresh hides and skins.
 - II.) Processed products, derived from the processing of primary products and include sausages, lard and salted hides.
- c) Production-related indicators (i.e meat, milk, eggs, hides, etc) divided into two categories:
 - I.) Products from slaughtered animals (i.e. meat, hides)
 - II.) Products from live animals (i.e. milk, eggs)
- d) Trade-related indicators: data on the imports and exports of Livestock and Livestock Products (LLPs). Variables include the type and quantity of LLPs as well as the trading partners (countries).
- e) Price-related indicators capture data on the prices of LLPs across the country.
- f) Livestock disease-related indicators which capture data on the prevalence and incidence of livestock diseases in the country.
- g) Staff and resources refers to the human resource base dedicated to statistical production in the livestock sub-sector as well as the fiscal and other resources dedicated for the same.

2.4.3 User Needs - Fisheries Subsector

Fisheries data and statistics are used by various organizations including government, non-governmental and academia for among others the following:

- Monitoring the performance of the fisheries in terms of catches, size and species of fish caught to assess the status of the stocks in order to make informed decision on either to increase or reduce fishing effort.
- Monitoring the development of aquaculture for the purposes of planning input supplies and also making cultured fish accessible to markets.
- Monitoring the water quality and limnology of catchment areas, lakes, rivers and swamps. This will guide planners and managers on aquaculture investment in water bodies and prevent unregulated discharge into aquatic systems. The data is shared with universities and other learning and research institutions as well as industries or entities wanting to invest in fishery areas.
- Used by scientists and academic institutions for publications to increase knowledge on fisheries
- Important in the review and development of fisheries management plans which provide a policy framework to guide the sustainable utilization of exploitable fish stocks.

ACTION PLAN TO IMPROVE STATISTICS FOR FOOD SECURITY, SUSTAINABLE AGRICULTURE AND RURAL DEVELOPMENT IN AFRICA

- Important in meeting the Department of Fisheries reporting obligations to international fisheries bodies such as the FAO.
- Sharing information with countries Zambia shares trans-boundary fisheries with such as Kariba with Zimbabwe, Tanganyika with Burundi, DR Congo and Tanzania, Mweru-Luapula with DR Congo and the Upper Zambezi with Botswana, Namibia and Zimbabwe.
- Important in development of national food balance sheets and used by other state agencies in estimation of fisheries contribution to the national economy.
- Preparation of national reports

2.4.4 User Needs - Forestry and Environment Subsector

The statistics for Land, Environment, Forestry, Water and Natural resources are generally used for planning and policy formulation. However, it is important that the information from the sub-sectors are used in an holistic way in order to achieve integrated development.

Land statistics are available at the Commissioner of Lands, Deeds & Registry and Survey departments. Land records have now been incorporated into one database called the Zambia Land Management Information System (ZLMIS).

In Forestry, statistics collected by the Forestry Department relate to production, consumption, spatial distribution, trade imports, exports and development of wood and non-wood forest resources for particular locations. Statistics on both wood and non-wood forest products are used to quantify the socio-economic benefits from forests and are used in the compilation of the subsector's contribution for Gross Domestic Product (GDP). Other uses include capital budgeting, demand and supply forecasts, production scheduling, resource allocation and optimal control. National Forest Monitoring are used to analyse the forest degradation and deforestation rates.

Environmental statistics are used to assess progress on the state of the environment and combines data from various subsectors including forestry, meteorology, water and climate change. The Meteorological Department utilizes the data collected from their weather station to develop trend analysis for monitoring seasonal forecast as well as floods. The Water Resources Management Agency (WARMA) collects hydrological and rainfall data to determine the water situation in the country. On the other hand, the Zambia Environmental Management Agency (ZEMA) collects data on water quality and pollution. The Climate Change Secretariat under the Ministry of National Development Planning collects data from on-going projects involved in climate mitigation projects, including those promoting SMART agriculture.

2.4.5 Data Gaps

In summary the data gaps identified by stakeholders include:

Censuses: to carry out censuses of

- Livestock and aquaculture to provide basic baseline data and a frame for more detailed surveys.
- Dairy processors.
- Milk collection centres.
- Beehive / apiary keepers.

Household Surveys: to carry out additional regular surveys covering

- Cost of production for individual agricultural produce.
- Horticulture (vegetables and flowers) and fruit production;
- Species level fish catch surveys;
- Aquaculture production;
- Non-timber products (Forest Livelihoods and Economic Survey);
- Consumption of individual agricultural commodities.
- Income from agricultural activities
- Labour and employment in agriculture

Economic Surveys: to cover

- Agro-input suppliers and agro-processors.
- Industrial wood processing companies.

Expansion of existing surveys: to cover

- Farmers practicing climate change adaptation measures;
- Type of pesticide used;
- Labour costs

Price collection: regular collection of farm gate and wholesale prices of agricultural commodities.

Informal cross-border trade: to restore and expand the cross border trade survey with more border points and more commodities.

Administrative systems: to cover

- Agro chemicals
- Water use (quality & quantity)
- Rainfall & temperature
- Crop stock and storage statistics
- Livestock slaughter slabs and abattoirs, number of slaughters, carcass weights
- Livestock disease outbreaks, vaccinations,
- Veterinary and livestock extension officers

ACTION PLAN TO IMPROVE STATISTICS FOR FOOD SECURITY, SUSTAINABLE AGRICULTURE AND RURAL DEVELOPMENT IN AFRICA

- Land for development in customary areas
- Timber products

Other

- Soil surveys
- Distribution maps of livestock, livestock infrastructure
- Ecosystem services data

2.5 Main Findings: Strength, Weaknesses, Opportunities and Threats (SWOT) for NASS

A SWOT analysis has been carried out for the overall agricultural statistical system in Zambia and for each of the component sub-sectors, A SWOT is a useful tool to assess the existing agricultural statistical system to identify the current weaknesses and strengths, the opportunities for improvements and factors that represent threats to the implementation of any improvements. The SWOT for NASS is shown overleaf (Table 3).

The main strengths of the NASS are seen to be the existing statistical capacity (with its established systems of field organisation, registers and geographic sampling frame) which adheres to professional and international standards, to make available relevant data for agricultural policy making.

The weaknesses identified fit into three broad groups. One set of weaknesses reflect governance and coordination and the perceived under-development of the agricultural statistical system (low profile of CSO in Government hierarchy; inadequate statistical legislation; limited coordination and collaboration in agricultural statistical production). Another group of weakness reflect inadequate financial and human resources; the later in terms of both numbers and skills (inability to attract and retain staff; agriculture census and survey work programmes not prioritised in Government budgets; non-existence of in-service training; inadequate analytical skills; lack of resources for data processing, analysis and dissemination). The last group of weaknesses are around statistical systems - under developed Sector Management Information Systems; failure to update the geographical frame; incomplete coverage of agro-business entities in the business register; difficulty in accessing data. The final weakness in this group - users of agricultural statistics have limited knowledge of national and international development processes and statistical standards - reflect the lack of ability of producers to educate users and to provide outputs which are user friendly.

The opportunities identified include the increased demand for agricultural data and increased government/ political commitment to development of statistics. The existence of international partnerships for statistical development and professional statistical standards/frameworks, e.g. SPARS, with the possibility to share experiences, resources and facilities in SADC, FAO, COMESA, AU, the African region and beyond. Other opportunity were seen to be provided by advances in IT leading to improved quality of data collected and timely dissemination of results and statistics as a commodity for business opportunities

The limited budgetary allocation for agricultural statistics given the high cost of capacity development, the relatively high cost of censuses and surveys and the high cost of statistical software were seen as the main threats. Another set of threats were identified around the low level of appreciation and understanding of agricultural statistics, the perceived undue interference with agricultural statistical production and release and the lack of commitment to coordination, collaboration, networking and information sharing. Finally the non-cooperation and fatigue of data survey respondents and inadequate data storage and security were recorded as threats.

Table 3: SWOT for National Agricultural Statistics System - Zambia

	Strengths		Weaknesses
a	Established statistical systems i.e. field organisation; business register and geographical frame	a	Users of agricultural statistics have limited knowledge of national and international development processes and statistical standards;
b	Existence of core statistical competencies	b	Under-development of the agricultural statistical system
c	Available data relevant for agricultural policy makers	c	Inadequate Statistical legislation
d	Compliance with professional and international standards in the compilation of agricultural statistics	d	Inadequate financial and human resources constraints;
		e	Low profile of CSO in Government hierarchy;
		f	Limited coordination and collaboration in agricultural statistical production;
		g	Under developed Sector Management Information Systems;
		h	Non-existence of in-service training;
		i	Inability to attract and retain staff;
		j	Lack of resources for data processing, analysis and dissemination;
		k	Difficulty in accessing data;
		l	Failure to update the geographical frame;
		m	Incomplete coverage of agro- business entities in the business register;
		n	Agriculture census and survey work programmes not prioritised in Government budgets.
o	Inadequate analytic skills Threats		
a	Increased government / political commitment to development of statistics	a	Low level of appreciation and understanding of agricultural statistics
b	Increased demand for agricultural data	b	Perceived undue interference with agricultural statistical production and release
c	Possibilities to share experiences, resources and facilities in SADC,FAO, COMESA, AU, the African region and beyond	c	Lack of commitment to coordination, collaboration, networking and information sharing
d	Existence of international professional statistical standards/frameworks, e.g. SPARS	d	Limited budgetary allocation for agricultural statistics
e	International partnerships for statistical development	e	Inability to attract and retain staff
f	Advances in IT leading to improved quality of data collected and timely dissemination of results.	f	Relatively high cost of censuses and surveys
g	Statistics are a commodity for business opportunity	g	High cost of Statistical Software
		h	Inadequate data storage and security
		i	High cost of capacity development

Chapter 3: Strategic Planning

3.1 Introduction

This Chapter presents the Vision and Mission statements for the national agricultural statistics system. There is a summary of the challenges facing the NASS linking to the Strategic Goals (SG) and Operational Strategies (OS) identified for the SPARS. The activities defined under each OS are outlined, including a calendar of the main data collection exercises. Finally a financing strategy, a monitoring and evaluation plan and an advocacy and communication plan are described.

3.2 Summary of Challenges

The main challenges reflect the lack of structures for collaboration and coordination, data gaps and resource constraints (human, IT, physical and financial). More specifically:

1. The current Statistics Act does not provide for an institutional arrangement for the National Statistical System (NSS) to facilitate the efficient and effective production of statistics. Consequently coordination and harmonization arrangements are either non-existent or rather weak. When adopted the new proposed Statistics Act will address these issues. In the interim there is a need to establish networks which can foster collaboration and understanding between producers and between users and producers across all the sectors, to ensure statistics are consistent, reliable, relevant and timely.
2. In particular there is no mechanism to oversee that appropriate data collection methodologies are adopted to carry out statistical activities.
3. There are more than 30 pieces of legislation relating to crops and other agricultural commodities which also implicitly provide for the generation of agriculture statistics. In the light of the new proposed Statistics Act, the statistical legislation within these Acts should be considered for amendment or even repeal.
4. While some agricultural statistical activities are included in the NSDS, full integration has not been possible (especially for forestry, water and environmental statistics). Close collaboration between the SPARS_ZAM and NSDS teams is needed to ensure the full integration of the agriculture sector into the next generation NSDS.
5. The NSDS process needs to be more widely owned as, while virtually all key informants believed that a strategic planning approach for statistics for the whole country existed, some did not know what it was called.
6. Almost all institutions indicated they did not have adequate human resources for statistical work,

with an inability to recruit and retain staff. In particular not all institutions have a statistics unit e.g. the MFL does not have a statistics unit (though there are plans to establish one) and only forestry has a dedicated statistics unit in the natural resources sub-sector.

7. However, the institutions indicated that the staff they had were generally skilled, experienced and qualified, except for the environment sub-sector. There was a lack of funding for training and capacity building (there is no in-service training programme) leaving staff with inadequate analytical skills.
8. Insufficient staff numbers adversely affects data collection, particularly for administrative statistics such as market statistics (e.g. sale volumes and prices). Extension officers (for both crops and fisheries) and veterinary officers are required to cover large areas and large numbers of households. Administrative data for livestock and fisheries are rated either 'poor' or 'fair' reflecting incomplete completion of records and reports due to lack of resources (staff and financial).
9. Technological advances provide an opportunity to improve the quality of data collected and the timely dissemination of results. The MoA and CSO are now using tablets for data collection in the field with significant savings in time and resources, though challenges remain at the data analysis stage and in providing timely reports.
10. The use of electronic equipment (PDAs, tablets, smart-phones, etc.) to collect administrative agricultural data in the field is very limited and currently the collection of livestock and fisheries data from field stations is paper-based. In the natural resources sector all institutions reported their IT equipment to be inadequate.
11. There is a lack of resources for data processing and analysis. The high cost of proprietary software is an issue with the lack of access and inadequate expertise in analytical software (including GIS software) negatively affecting the timely production of data.
12. Lack of transportation is an issue across all sectors.
13. While the CSO Head Office has recently moved into newly built offices, officers in veterinary camps do not have offices nor office equipment. Fisheries officers in the districts share their offices with other government departments while offices for natural resources staff require renovation.
14. The existing statistical capacity within CSO & MoA to carry out annual surveys is seen as a strength. However, the sampling frame represents the main food crops better than it does the other crops and the livestock sector. Where confidence intervals are large the Government may use industry generated statistics in place of the survey estimates.
15. Priorities for crop statistics are driven by national food security decision making. As a result

ACTION PLAN TO IMPROVE STATISTICS FOR FOOD SECURITY, SUSTAINABLE AGRICULTURE AND RURAL DEVELOPMENT IN AFRICA

commodities of economic importance, such as horticulture (e.g. tomato, onion, cashew nuts) that are not perceived to be directly impacting on food security have low priority for the resources, limiting the information that is available.

16. Statistics on formal imports and exports of agricultural products are rated 'good' but stakeholders, across the agricultural sectors, felt that informal border trade, which is significant, was not being captured, and consequently graded trade data overall 'fair' for agricultural commodities.
17. The only national source of farm-gate prices is the Post-Harvest Survey. Wholesale prices are collected at district level by district marketing development officers (DMDO) where such officers are in post. The CSO collects retail price data every month from selected districts of the country.
18. A lot of statistical data is kept in raw form within organisations and only a small portion of the data collected is processed into indicators that can be monitored over time. In general Sector level Management Information Systems are under-developed. Inadequate data storage and security may compromise data. There is very limited documentation of important data collection outputs despite the considerable amount of resources used to collect the information.
19. There is a lack of websites to provide online platforms to disseminate and share information. In particular the land, water, forestry and environment sub-sectors do not have any infrastructure for data and information sharing and dissemination. The lack of resources to support dissemination and communication has led to inadequate interpretation and presentation of technical data to the general public.
20. The Government funds some surveys, especially the Crop Forecast Survey, but does not have enough resources to finance all agricultural data collection.
21. While there is an increased demand for agricultural data there is limited commitment from top management to provide resources for data collection; agriculture censuses and surveys are not prioritised in Government budgets.
22. As the CSO is a department in the Ministry of National Development Planning, it has a low profile and shares the budgetary allocation that is given to the parent Ministry with the other departments. There is no dedicated budget line for data collection in the MFL. Financial resources to support statistics for natural resources are generally inadequate and the institutions do not have dedicated budget lines for statistical work.
23. Overall donor support for agricultural statistics has been elusive. The last Census of Agriculture was done in 1991-92, so the holding of another is long over-due. Preparations are underway for carrying out the first ever Livestock and Aquaculture Census. The Government has dedicated funds and other development partners have promised to contribute resources.

24. International partnerships exist and are being used for statistical development (e.g. UNECA, FAO, COMESA) While institutions follow internationally set standards and frameworks for data collection, many users of agricultural statistics have limited knowledge of these processes and there is insufficient appreciation of statistics by managers and decision makers.

3.3 Vision and Mission Statements

The Vision of the Zambia SPARS, reflecting the future image of the national agricultural statistical system is: 'An efficient, responsive and coordinated source of agricultural and rural statistics'.

The Mission of the Zambia SPARS, reflecting what the national agricultural statistics system should deliver, is: 'To provide quality agricultural and rural statistics for evidence-based policy and decision making for enhanced user satisfaction'.

3.4 Strategic Plan

3.4.1 Goals & Strategies

For the development of SPARS_ZAM, five Strategic Goals have been elaborated to meet the challenges (listed in section 3.2) which have been identified by stakeholders in the various sub-sectors of agriculture. These Strategic Goals, which also link to the specific Goals of the NSDS, establishing the close alignment of the SPARS and the NSDS, are:

SG1: Improved coordination & management of agriculture statistics

SG2: Meet the national and international demand for agriculture statistics

SG3: Strengthen statistical operations & processes

SG4: Implement a comprehensive human resource strategy

SG5: Develop a funding strategy for statistical operations.

Table 4 shows the Strategic Goals, the challenges each addresses (using the numbering as in section 3.2) and the operational strategies that have been agreed in order to implement SPARS_ZAM.

ACTION PLAN TO IMPROVE STATISTICS FOR FOOD SECURITY, SUSTAINABLE AGRICULTURE AND RURAL DEVELOPMENT IN AFRICA

Table 4: Strategic Goals, Challenges addressed and Operational Strategies

STRATEGIC GOAL	PURPOSE & CHALLENGES ADDRESSED	OPERATIONAL STRATEGIES
SG1: Improved coordination & management of agriculture statistics	To ensure the production of agriculture statistics is coordinated and harmonised Challenges Addressed: 1, 2, 3, 4, 5, 24	OS1.1: Improve coordination, collaboration and networking among stakeholders
		OS1.2: Improve technical coordination among data producers
SG2: Meet the national and international demand for agriculture statistics	To ensure user needs are increasingly met. Challenges Addressed: 8, 14, 15, 16, 17.	OS2.1: Adopt an integrated census and survey programme
		OS2.2: Expand the compilation, analysis and reporting of data including from administrative records
SG3: Strengthen statistical operations & processes	The collection, processing, reporting and dissemination of agriculture statistics is efficient and effective. Challenges Addressed: 9, 10, 11, 12, 13, 18, 19.	OS3.1 Provide appropriate and adequate physical infrastructure
		OS3.2 Improve data access, knowledge management and communication
		OS3.3 Monitor and improve data quality
SG4: Implement a comprehensive human resource strategy	Establish a cadre of skilled professional statistical personnel Challenges Addressed: 6, 7, 8.	OS4.1 Establish and maintain a critical mass of professional agricultural statistics personnel
		OS4.2 Establish a training programme to develop the capacity of agricultural statistics personnel
SG5: Develop sustainable funding for statistical operations	Availability of funds leads to timely implementation of planned statistical activities. Challenges Addressed: 20, 21, 22, 23.	OS5.1 Enhance and strengthen collaborations to support sustainable funding for agricultural statistics activities
		OS5.2 Advance the awareness of the importance of agricultural statistics

SG1: Improved coordination & management of agriculture statistics

OS1.1: Improve coordination, collaboration and networking among stakeholders

This includes supporting participation in NSS technical sub-committees on agricultural statistics to provide valuable feedback to data producers on user needs and the relevance of statistics currently produced. Though the legal necessity to establish such committees awaits the passing of the new Statistics Act, their immediate inception will be beneficial to the NSS and all its partners. In particular it is expected improved coordination will lead to the full integration of all sub-sectors of agriculture into the next generation of the NSDS. Links with national, regional and global agricultural associations will improve statistical operations by facilitating the exchange of views, giving exposure to new methodologies and best practice and bringing support to introduce new operations and programmes.

OS1.2: Improve technical coordination among data producers

The entire production of agricultural statistics, from collection to analysis, should utilize effective and innovative tools. Best practice, methods and international standards (suitably adapted) should be identified and promoted to support coordination amongst data producers, with particular attention to adopting appropriate data collection methodologies and harmonizing indicator definitions.

SG2: Meet the national and international demand for agriculture statistics**OS2.1: Adopt an integrated census and survey programme**

The census and survey programme, complimenting information from administrative records and other sources, will be designed to meet data needs and fill data gaps.

OS2.2: Expand the compilation, analysis and reporting of data including from administrative records

As with the census and survey programme, the focus of this operational strategy will be to meet user needs and fill data gaps by promoting data collection and improving reporting and analysis.

SG3: Strengthen statistical operations & processes**OS3.1 Provide appropriate and adequate physical infrastructure**

Dedicated offices, appropriately equipped, are needed for agricultural statistics units at all levels to improve statistical operations. The use of ICT has become a fixture in statistical work. This includes the need to strengthen data transfer, data storage of data and the use of advanced statistical software packages for data analysis.

OS3.2 Improve data access, knowledge management and communication

This operational strategy will develop and implement data management policies for data access and confidentiality. This also involves the establishment of web sites and data warehouses, linking to the CSO MIS system, with the appropriate capacity and skills to facilitate the integration and analysis of data for decision making – an area of weakness identified in the SWOT. This operational strategy will also develop and implement an Information, Knowledge Management and Communication (IKMC) strategy for designing and producing appropriate dissemination products.

OS3.3 Monitor and improve data quality

The M&E system which will underpin the implementation of SPARS_ZAM is an example of the frameworks to be set up to ensure that agricultural statistical activities are accountable, that the data collected is of good quality, and to show that the resources made available have been wisely used.

SG4: Implement a comprehensive human resource strategy

OS4.1 Establish and maintain a critical mass of professional agricultural statistics personnel

The availability of adequate numbers of skilled and trained personnel to undertake statistical work is an important requirement for the development of any statistical system. This is one of the weaknesses identified in the assessment, particular the need to establish dedicated statistics units in some MDAs.

OS4.2 Establish a training programme to develop the capacity of agricultural statistics personnel

It is important that the NASS institutions identify their training needs and ensure that these are being met through training programmes offered across the NSS or through other outlets.

SG5: Develop a funding strategy for statistical operations.

OS5.1 Enhance and strengthen collaborations to support sustainable funding for agricultural statistics activities

The identification of the weaknesses in statistical systems and the requirements for improvements, as identified in the SPARS_ZAM process, serves as a basis to discuss the additional resources required to ensure the continued supply of much needed data policy making and planning.

OS5.2 Advance the awareness of the importance of agricultural statistics

This will be achieved through a targeted advocacy and communication for decision-makers and other relevant stakeholders and by using social media to increase awareness and provide education.

3.4.2 Activities

Some of the activities associated with each Strategic Goal are described below:

SG1: Improve coordination and management of agricultural statistics;

- Review and amend the legal frameworks for collecting statistics in the sub-sectors
- Participate in NSS technical meetings, NASS subsector technical meetings & development of next generation NSDS;
- Identify and maintain links with stakeholders - national and international;
- Develop a metadata handbook to harmonise statistical definitions across the sub-sectors;
- Develop a compendium of best practice methods for collecting statistics across the sub-sectors;
- Disseminate metadata & methodology handbooks and raise awareness

SG2: Address the national & international demand for agricultural statistics

- Conduct Census of Agriculture and survey programme to meet user needs and fill data gaps;
- Strengthen and support routine data collection activities;
- Monitor producer, farm gate and market prices of agricultural commodities
- Develop data collection instruments for environment and climate change and mobilize the subsector for the collection of data;
- Enhance the analysis of data including updating the food balance sheet, developing natural resource accounting and utilising more satellite imagery.

SG3: Strengthen statistical operations and processes

- Acquire / refurbish and equip offices for agricultural statistics activities;
- Procure transport equipment for agricultural data collection;
- Procure IT equipment and software;
- Develop and implement data access and confidentiality policies;
- Establish and maintain data centres and web portals;
- Develop and implement an Information, Knowledge Management and Communication (IKMC) strategy;
- Train agricultural statistics staff and stakeholders to monitor statistical activities;
- On-going monitoring of statistical activities;
- Annual data quality workshops and reports.

SG4: Implement a comprehensive human resource strategy

- Set up and strengthen agricultural statistics units;
- Recruit and deploy adequately qualified personnel;
- Undertake training needs assessments;
- Develop partnerships with training providers;
- Develop training curriculum;
- Undertake training.
-

SG5: Develop a sustainable funding for statistical operations

- Organise advocacy meetings to lobby for funds for statistical activities;
- Organise workshops to prepare funding proposals;
- Hold sensitization events for stakeholders and policy makers;
- Use media to increase awareness and provide education

3.4.3 Calendar of Main Data Collection Activities

As part of the process filling data gaps in the agricultural and rural statistics system, a list of data collection activities has been identified for implementation over the 5 years of the Action Plan. The frequency of each data collection exercise, together with the responsible lead agencies is shown in Table 5.

The inclusion of an agricultural module with the Housing & Population Census will provide a sampling frame for follow-on Agriculture and Livestock & Aquaculture large scale sample surveys.

Table 5: Calendar of main data collection activities							
Data Collection Activity	Frequency	Responsibility	2019	2020	2021	2022	2023
Population & Housing Census – agricultural module	10 years	MoA, CSO					
Agriculture Census (large scale sample survey)	5 yearly	MoA, CSO					
Crop Forecast Survey	Annual	MoA, CSO					
Special Crop specific survey	Annual	MoA, CSO					
Post Harvest Survey	Annual	MoA, CSO					
Crop Monitoring (administrative data)	Annual	MoA					
Agricultural Inputs Price Survey	6 monthly	MoA					
Market Price Survey	6 monthly	MoA					
Cost of Production Survey	Annual	MoA, CSO					
Informal Cross Border Trade Survey	Continuous	IAPRI					
Livestock & Aquaculture Census (large scale survey)	Every 3 years	MFL, CSO					
Apiculture Census	Every 3 years	MFL, CSO					
Survey of livestock diseases	Annual	MFL, CSO					
Inventory of livestock & veterinary facilities	5 yearly	MFL, CSO					
Survey of toxins and residues (food safety issues)	Annual	MFL, CSO					
Fisheries & Livestock Monthly Market Price Collection	Monthly	MFL					
Fish Frame Surveys	Annual programme	DoF, CSO					
Catch Assessment Surveys	3 times / year	DoF, CSO					
Gillnet surveys	Annual Programme	DoF, CSO					
Hydro acoustic surveys	Annual Programme	DoF, CSO, PPID					
Aquaculture Production Survey	Annual	DoF, CSO					
Collection of fish marketing statistics	Monthly	DoF, CSO					
National Forest Inventory	5 yearly	MLNR-FD					
Climate adaptation	Annual	MoA, MLNR, MoH, MoE, MTC, MWDSEP, MID					
Forest Livelihood survey	3 yearly	CSO, FD					
Environmental outlook assessment	2 yearly	ZEMA					
Soil Productivity Assessments	2 yearly	MoA, FD					

3.5 Financing Strategy

The Action Plan with a detailed annual budget by activity level is set out in Annex 5. The total budget for all activities under SPARS_ZAM over the 5 Year Period is US \$57.9m.

Each STWG has set out its priorities for financing. These have been combined into one list which is presented in Table 6. This table shows, for each activity, the amount of funding identified as available (code 1). This can either be from routine government allocations to the various institutions or be commitments from other sources (such as donors) or projects. Any additional funding required to complete activities is then identified either as high priority (code 2) or other funding required (code 3).

One problem that has been noted is the fact that budgetary allocations are rarely released in their entirety. The government is implored to ensure that money set aside for these programs is released as planned. We would suggest ring-fencing such funds, as this is one way to ensure the successful implementation of the SPARS-ZAM. This will in turn generate a wealth of statistics for monitoring the development of the sector and also SDGs.

Table 6 Financing Strategy (US \$000)

Serial No.	Activity	Funding available	Priority for Funding	Other funding required	Total
		-1	-2	-3	
1.1.1	Review and revise agricultural statistics legal & programme frameworks	40	120	55	215
1.1.2	Participate in NSS meetings including technical working groups on agricultural statistics and development of next generation NSDS	78	104	95	276
1.1.3	Improve networking with stakeholders - national and international	100	339	362	801
1.2.1	Develop a metadata handbook to harmonise statistical definitions for the agriculture sector	10	210	20	240
1.2.2	Develop a compendium of best practice methods for collecting agricultural statistics	15	150	40	205
1.2.3	Disseminate metadata & methodology handbooks and raise awareness	67	164	152	383
	Total SG1	310	1,087	724	2,120
2.1.1	Integrated census & survey programme - crops[1]	13,600	4,350	250	18,200
2.1.2	Integrated census & survey programme - livestock[2]	7,850	2,350	0	10,200
2.1.3	Integrated census & survey programme - fisheries	1,543	3,596	1,386	6,525
2.1.4	Integrated census & survey programme - forestry & environment	285	1,000	80	1,365
2.2.1	Develop data collection Instruments for environment and climate change	200	35	0	235
2.2.2	Train & sensitise staff to collect statistics from administrative processes	100	240	240	580
2.2.3	Support routine data collection and reporting	615	732	360	1,707
2.2.4	Enhance the analysis of data	69	380	56	505
	Total SG2	24,262	12,683	2,372	39,317
3.1.1	Acquire/refurbish and equip offices for agricultural statistics activities	890	783	0	1,673
3.1.2	Procure transport equipment for data collection (vehicles, motor cycles, boats)	866	835	240	1,941
3.1.3	Procure computer and other specialised survey equipment for data collection / processing	1,402	1,378	566	3,346
3.1.4	Pilot and introduce new initiatives for data collection / processing	200	350	150	700
3.2.1	Develop & implement data quality, data access and confidentiality policies	300	105	40	445

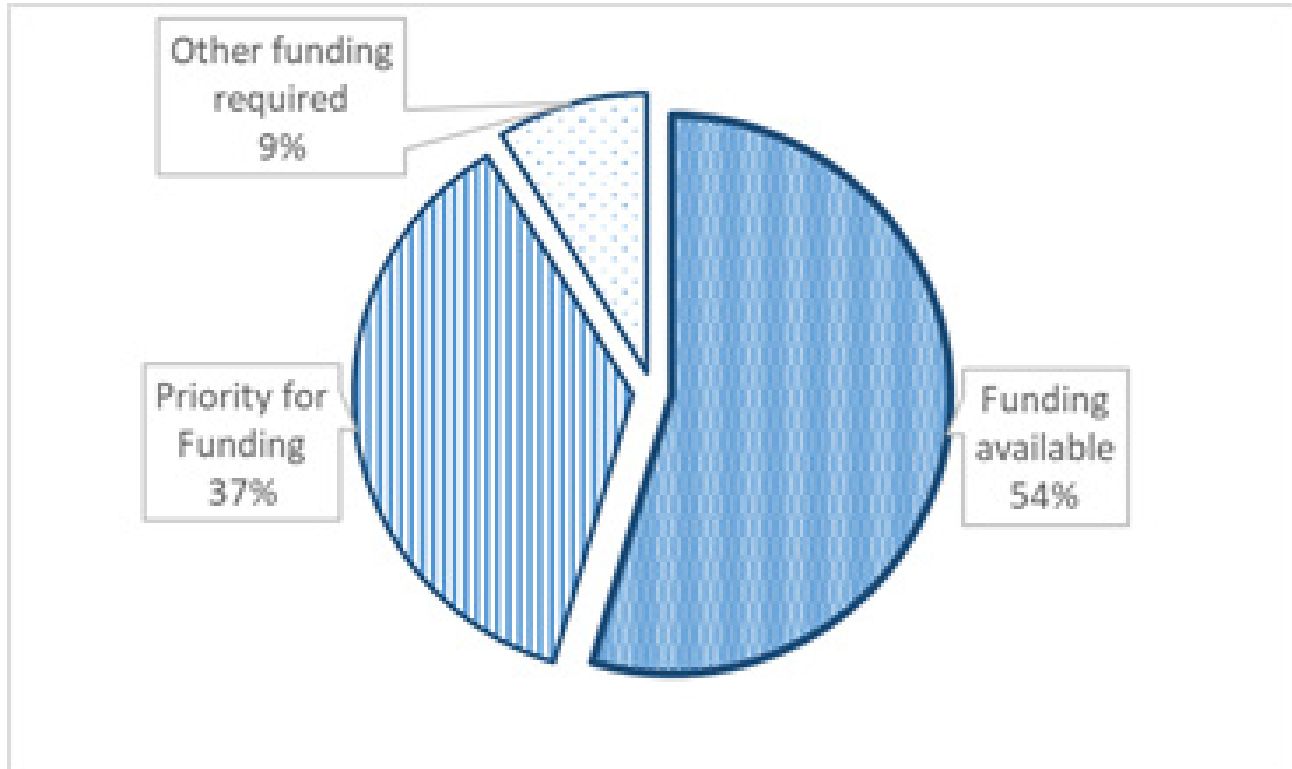
ACTION PLAN TO IMPROVE STATISTICS FOR FOOD SECURITY, SUSTAINABLE AGRICULTURE AND RURAL DEVELOPMENT IN AFRICA

Serial No.	Activity	Funding available	Priority for Funding	Other funding required	Total
		-1	-2	-3	
3.2.2	Develop and implement an Information, Knowledge Management and Communication (IKMC) Strategy	0	300	300	600
3.2.3	Establish and maintain data centres and web portals for agricultural statistics	186	340	20	546
3.3.1	Train agricultural statistics staff and stakeholders to monitor agricultural statistics activities	253	363	0	615
3.3.2	Ongoing monitoring of statistical activities	225	270	0	495
3.3.3	Annual data quality workshops and reports	105	170	75	350
	Total SG3	4,427	4,894	1,391	10,711
4.1.1	Set up / strengthen agriculture statistics unit	110	155	0	265
4.1.2	Recruit and deploy adequately qualified personnel	1,410	0	0	1,410
4.2.1	Training of agricultural statistics personnel	790	2,092	408	3,290
	Total SG4	2,310	2,247	408	4,965
5.1.1	Organise advocacy meetings to lobby for funds for agriculture statistics activities	120	210	40	370
5.1.2	Organise workshops to prepare funding proposals	55	155	55	265
5.2.1	Hold sensitization events for stakeholders & policy makers	180	125	70	375
5.2.2	Use media to increase awareness and provide education	275	75	55	405
	Total SG5	630	565	220	1,415
	TOTAL SPARS_ZAM	31,938	21,475	5,115	58,528

Of the total budget of US \$58.5m for SPARS_ZAM activities over a half (54%) is anticipated from government funding or has been committed by others. Of the remaining US \$26.6m to be found, US \$21.5m is identified for priority activities. However, budgeted allocations and budgeted releases do not always match and releases can be significantly lower than budgets. The situation is made more complex by the lack of separate and specific budget lines for statistical activities.

While multilateral bodies such as FAO, UNECA, AfDB, currently provide support to build capacity in agricultural statistics, through the global fund, the adoption and implementation of SPARS is an important step to raise the profile of agricultural statistics and increase resource mobilisation.

Figure 5: Financing Strategy – SPARS_ZAM

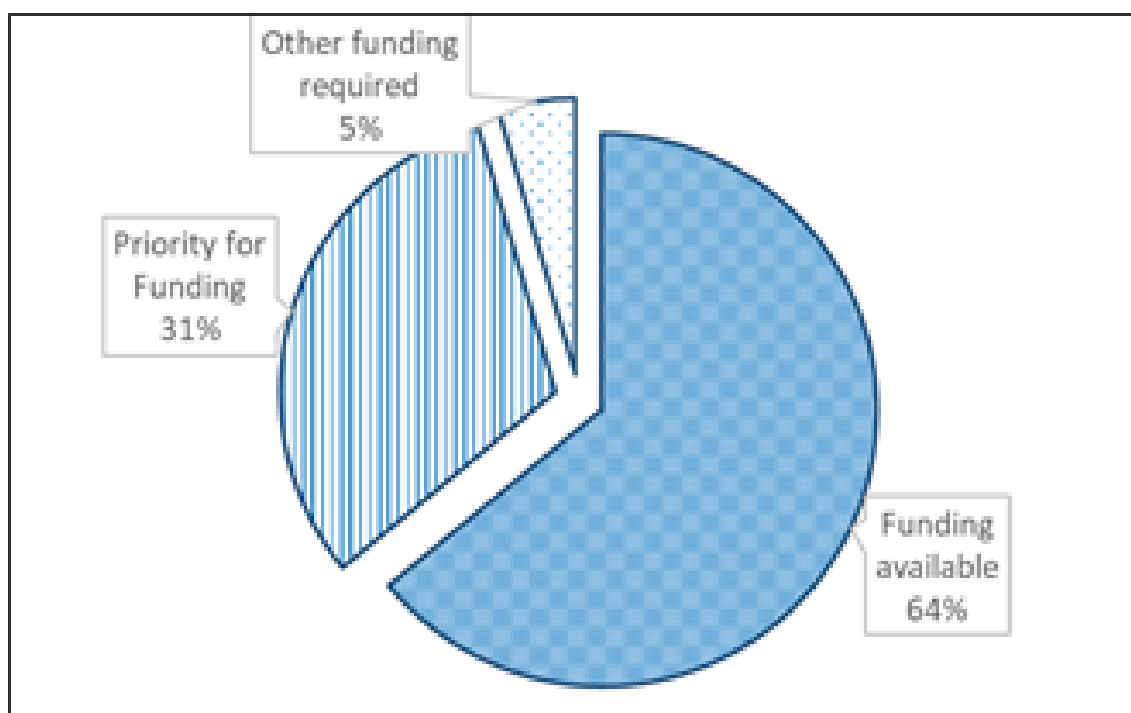


ACTION PLAN TO IMPROVE STATISTICS FOR FOOD SECURITY, SUSTAINABLE AGRICULTURE AND RURAL DEVELOPMENT IN AFRICA

Table 7 shows the total budget required and financing strategy for each of the main data collection activities to be undertaken during the 5 year period of this Plan.

Table 7: Financing Strategy for Main Data Collection Exercises

Data Collection Activity	Funds Available	High Priority for funding	Other funding required	TOTAL \$000
	-1	-2	-3	
Census of Population & Housing - agriculture module	0	500	0	500
Census of Agriculture (large scale sample survey)	6,300	700	0	7,000
Crop Forecast Survey	5,000	0	0	5,000
Special Crop specific survey	100	400	0	500
Post Harvest Survey	2,000	2,000	0	4,000
Crop Monitoring (administrative returns)	125	125	0	250
Agricultural Inputs Price Survey	0	100	0	100
Market Price Survey	50	50	0	100
Cost of Production Survey	50	300	150	500
Cross border informal trade survey	100	300	100	500
Livestock & Aquaculture Census (large scale survey)	5,700	300	0	6,000
Apiculture Census	200	200	0	400
Survey of Livestock diseases	1,000	1,500	0	2,500
Inventory of Livestock & Veterinary Facilities	300	0	0	300
Survey of toxins and residues (food safety issues)	450	300	0	750
Fisheries and Livestock Monthly Market Price Survey	400	150	0	550
Fisheries Frame Surveys	184	300	256	740
Fisheries Catch Assessment Surveys	440	2,000	1,130	3,570
Fisheries Gillnet surveys	332	458	0	790
Fisheries Hydro Acoustic Surveys	87	288	0	375
Aquaculture Production Survey	300	450	0	750
Fish marketing statistics	200	250	0	450
National Forest Inventory	85	500	0	585
Climate adaptation	20	90	0	110
Forest Livelihood Survey	100	80	30	210
Environmental outlook assessment	0	100	0	100
Soil productivity assessments	0	100	0	100
Total budget for main data collection activities	23,523	11,541	1,666	36,730

Figure 6: Financing Strategy: Main Data Collection Exercises

In addition, other data activities across the sub-sectors are budgeted at US \$2.6m. This gives a total budget of \$39.3m for all agricultural data collection activities (68% of the total SPARS_ZAM budget). Most of the resources will come from Government. But where there are funding gaps, these may be filled by securing finances from cooperating partners and multilateral bodies. One way this can be done is at meetings convened to sell the SPARS_ZM to the potential donors.

3.6 Monitoring & Evaluation

3.6.1 Introduction

Monitoring and evaluation is an important phase in gauging the progress of implementation of SPARS. There will be a continuous process of collecting and analyzing information, assess the efficiency and effectiveness in implementing the Strategic plan. The NSS Technical Sub-committee on Agricultural Statistics (composed of representatives of structures producing agricultural and rural statistics), will be responsible for producing the monitoring and evaluation reports of the implementation of the Strategic Plan. These reports will be passed to the Steering Committee on Agricultural and Rural Statistics (SCARS) in its capacity as the decision-making body for SPARS_ZAM for endorsement (see Figure 3 on page 14). If in the future, the CSO will be a semi-autonomous agency with a Board of Directors, that Board will legally undertake the function of approving documents on all statistics programmes including SPARS_ZAM.

3.6.2 Monitoring Tools

The indicators in the detailed logical framework will be used in tracking the implementation and achievements of the SPARS_ZAM. In addition, for successful implementation of SPARS, activities shall be prioritized in the annual work plans and aligned to implementing institutions budgets and performance contracts.

3.6.3 Monitoring, Evaluation & Reporting

Each subsector will, on a regular basis, provide status reports on activities being implemented, along with key performance indicators. The NSS Technical Sub-committee on Agricultural Statistics, through the SCARS secretariat, will consolidate the subsector reports on progress of SPARS implementation. The following reports will be produced:-

- Bi-annual report & Annual report
- Mid-term review report
- End of plan period evaluation report

3.6.4 Feedback Mechanism

The reports generated will be communicated through management and stakeholder meetings, workshops and review-seminars, among others. The progress reports will prompt formulation of corrective measures where appropriate.

3.6.5 Results Based Logical Framework

A Logical Framework for Monitoring has been developed to provide the Results-Chain giving the Impact, Outcomes and Outputs of SPARS_ZAM together with performance indicators (Baseline and Targets), means of verification, risks and mitigation measures. The Logical Framework is given in Annex 3 of this Strategic Plan.

3.7 Advocacy & Communication Plan

In Zambia, Agricultural and Rural Statistics are generated and disseminated by different entities, including the Ministry of Agriculture (especially active on crop statistics), Ministry of Fisheries and Livestock, and the Central Statistical Office. Each of the entities is involved in the generation of agricultural statistics and has its own ways of disseminating the results; there is no single place where one can go to find all the agriculture and rural statistics.

The new Census and Statistics Act provides for dissemination of all data collected using public resources. This provision requires that a well-defined and forward-looking dissemination strategy and

policy are formulated. The SPARS_ZAM, being a subset of the National Strategy for the Development of Statistics, will benefit from the provision of the over-arching NSDS. The SPARS communication plan aims at reaching the entire spectrum of agriculture statistics stakeholders through an all-inclusive and participatory approach. Under the NSDS, there will be statistics units formed in all the subsectors. Focal point persons from these units, with clearance from their supervisors, will be required to submit all official statistics they generate to a central repository managed by CSO. This repository or database will be accessible to all stake holders generating various official statistics, thus addressing the present problem where stakeholders have difficulty accessing official statistics and data. Agriculture and Rural statistics will benefit from this arrangement, as it will also increase its visibility if it is implemented the way it is planned. In addition to this channel, a SPARS Advocacy and Communication Plan will be developed, with, among others, the following objectives:

- to increase stakeholder awareness of agricultural statistics;
- to enhance stakeholder buy-in and goodwill for SPARS activities;
- to create a platform for dialogue and advocacy in agricultural and rural statistics; and
- to promote knowledge- sharing and adoption of new methodologies, tools and good practices in the field of agricultural statistics.

3.7.1 Implementation approach

The SPARS shall guide implementation of sector statistical activities, thereby enhancing production of agricultural and rural statistics in the country. Implementation of the advocacy and communication plan will be through a holistic and integrated approach, involving the use of more than one channel or method to communicate the identified SPARS output. This will necessitate the creation of a multi-agency secretariat with membership drawn from organisations that are also implementing the NSDS. Thus, the following are (proposed) members of the secretariat:

- Central Statistical Office (CSO)
- Ministry of Agriculture (MoA)
- Ministry of Fisheries and Livestock (MFL)
- Ministry of Lands, Natural Resources and Environmental Protection (MLNREP)

The tools and approaches that may be used to communicate SPARS outputs and also raise public awareness may include:

Websites: All data producers in the NSS will be encouraged to establish websites containing pages that are dedicated to the statistical information they produce. The websites will be cross referenced to the websites of other data producers in the NSS. A specific website for SPARS will be developed. There is no doubt that with a dedicated website for SPARS, a larger audience will be reached and conveying key messages of SPARS will be easy.

ACTION PLAN TO IMPROVE STATISTICS FOR FOOD SECURITY, SUSTAINABLE AGRICULTURE AND RURAL DEVELOPMENT IN AFRICA

Increasing visibility through advocacy materials: Advocacy materials (i.e. brochures, leaflets, posters, folders, T-shirts, etc.) are useful for raising awareness of SPARS outputs. Materials such as these are best disseminated at large public gatherings such as at the International Trade Fair, and the Agriculture and Commercial Show. These events are attended by tens of thousands of people. Preparation of SPARS-themed publications and statistics bulletins, convening special seminars and workshops at which SPARS-related topics/outputs are discussed are all good communication channels.

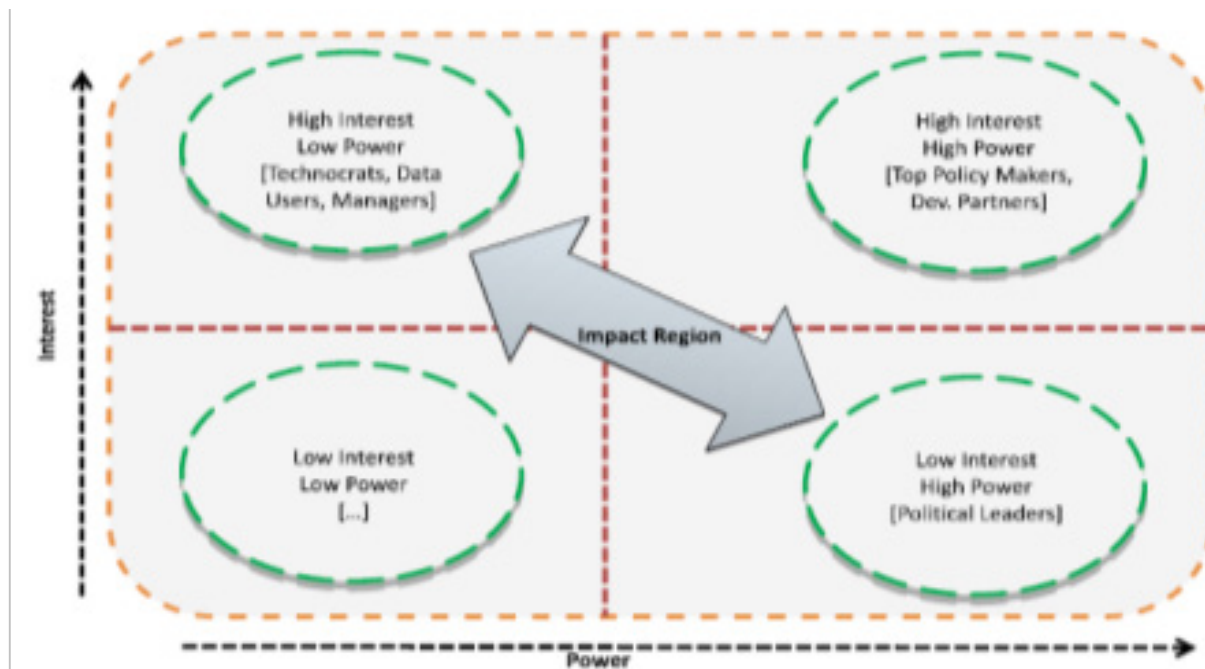
Increasing SPARS outreach activities: such as issuance of e-bulletins and newsletters, use of public mass media (such as Community Radio Stations): The regular issuance of newsletters or e-bulletins will help increase outreach to specific audience groups with the objective of keeping them informed on activities, events, developments and reports and publications. Placing advertisements or running paid-for programmes on Community Radio Stations would also enhance the visibility of SPARS and its outputs.

Meetings/Workshops: Arranging meetings and workshops with Politicians, especially Members of Parliament, Ministers and other key stake holders who can influence policy. Presenting SPARS outputs at Constituency and Ward levels would unfailingly win the support of this group of persons.

3.7.2 Stakeholder Mapping and Prioritization Matrix

To effectively deliver its goals and objectives, the communication secretariat will as a first priority undertake a mapping of stakeholders' key to the delivery of the SPARS. This will assist in directing efforts in the weak areas for optimal results. The next crucial step will be to develop a priority matrix for categorization of the stakeholders into four categories according to their interest and influence in agricultural statistical activities. The structure of a Priority Matrix is given in Figure 7 below

Figure 7: Stakeholder Priority Matrix



The groups of stakeholders (Audience/ target groups) and the key messages for each group are given in the table below.

Table 8: Audiences and Key Messages

Audience/Target Group	Key messages
High Interest, High Power [Top Policy Makers, Dev. Partners]	Importance of agricultural statistics
High Interest, Low Power [Technocrats, Data Users, Managers]	Statistics have a cost,
Low Interest, High Power [Political Leaders]	The production of reliable agricultural statistics is a profitable investment
Low Interest, Low Power [...]	Why should statistics be produced?

ACTION PLAN TO IMPROVE STATISTICS FOR FOOD SECURITY, SUSTAINABLE AGRICULTURE AND RURAL DEVELOPMENT IN AFRICA

The SPARS shall guide implementation of sector statistical activities, thereby enhancing production of agricultural and rural statistics in the country. It will facilitate prioritization of agricultural statistical programmes for informed planning, monitoring and evaluation, policy design and decision making.

The SPARS communication plan aims at reaching the entire spectrum of agricultural statistics stakeholders through an all-inclusive and participatory approach. The Communication plan will be underpinned by an integrated and holistic approach. An integrated approach will encompass use of various methodologies/approaches in communicating the identified outputs. A multi-agency secretariat drawn from the implementing institutions and counties and will be anchored within the NSDS framework.

Annex 1: Stakeholders Consulted

It was agreed at the beginning of the Assessment phase that, to avoid causing respondent fatigue, each consultant was to visit a given number of institutions/ministries. Questionnaires from institutions that were of common interest to more than one consultant were to be shared between the concerned persons. Thus, for example, the questionnaire from the Zambia National Farmers Union (ZNFU) was to be shared between the consultant covering crops, and the one doing Cross-Cutting Issues.

a) Crop statistics Stakeholders

Ministry/ Institute	Division/ Department	Function
IAPRI (Indaba Agricultural Policy Research Institute)	Research and Outreach	IAPRI's mandate is to utilize empirical evidence to advise and guide the Government of the Republic of Zambia and other stakeholders on agricultural investments and policies. The overarching goal of IAPRI's policy analysis and outreach efforts is to identify policies and investments in the agricultural sector that can effectively stimulate inclusive economic growth and poverty reduction. This is achieved through three core operational activities:
		<ul style="list-style-type: none"> Producing trusted, impartial, and high-quality research on agricultural, food, and natural resource policy issues in Zambia and the wider southern Africa region;
		<ul style="list-style-type: none"> Integrating research findings into national, regional, and international programs and policy strategies to promote sustainable agricultural growth and cut hunger and poverty in Zambia; and
		<ul style="list-style-type: none"> Supporting the development and strengthening of capacity for policy research, analysis and outreach of public and private institutions in Zambia.
Central Statistical Office	Information and Research	Collection, Analysis and Dissemination of Official Statistics
Zambia National Farmers Union		Promote and safeguard members interests. Also collects agric statistics.
ZARI (Zambia Agricultural Research Institute)	Research	Agricultural Research
Ministry of Agriculture	Policy & Planning Unit	
University of Zambia	School of Agriculture	Offering Higher Education
F.A.O		Aims at eradicating hunger, food insecurity, etc. [Website more informative]
FEWSNET (Famine Early Warning Systems Network)		Provision of Early Warning and Analysis on acute food insecurity.

ACTION PLAN TO IMPROVE STATISTICS FOR FOOD SECURITY, SUSTAINABLE AGRICULTURE AND RURAL DEVELOPMENT IN AFRICA

b) Livestock statistics Stakeholders

Ministry/Institute	Division/Department	Function
Ministry of Fisheries and Livestock	Veterinary Services	To prevent, control and contain livestock disease vectors and pests in order to enhance livestock production and productivity
	Livestock Development	To enhance livestock production and productivity
	Policy Planning and Information	To plan, monitor and evaluate the implementation of ministerial and sector policies and programmes
University of Zambia	School of Veterinary Medicine	To train human resource for the livestock sub-sector
	School of Agricultural Sciences	To train human resource for the agricultural sector
IAPRI		To undertake agricultural policy research and outreach
Central Statistical Office		
Dairy Association of Zambia		To promote and safeguard the interests of the dairy industry
Poultry Association of Zambia		Enhance and support sustainable growth of the poultry industry whilst maintaining prosperity and profitability
Zambia National Farmers Union		To promote and safeguard the interests of the agricultural industry
Forest Fruits		To promote the marketing of honey
Small Livestock Association of Zambia		To undertake and promote the marketing of small livestock

c) Fishery statistics stakeholders

Ministry / Dept	Division /Dept	Function
Dept of Fisheries MFL	Capture fisheries	The Department of Fisheries of the Zambian Ministry of Fisheries and Livestock oversees the implementation of national programs in capture fisheries and aquaculture development. It is responsible for the enforcement of relevant laws and policies related to aquatic resources and carrying out regulatory functions. The Dept. promotes sustainable utilization of fisheries resources by employing research, extension strategies, training programs and promoting public/private partnerships at all levels of development and management. One of the Dept.'s major responsibilities is the collection, storage and analysis of data in collaboration with the Central Statistics Office
	Aquaculture	
	Fisheries data & Information	
IAPRI (Indaba Agricultural Policy Research Institute)	Agricultural research, consultancy and policy	IAPRI's mandate is to utilize empirical evidence to advise and guide the GZM and other stakeholders on agricultural investments and policies. The overarching goal is to identify policies and investments in the agricultural sector that can stimulate inclusive economic growth and reduce poverty. This is achieved through three core operational activities:
		<ul style="list-style-type: none"> Producing trusted, impartial, and high-quality research on agricultural, food, and natural resource policy issues in Zambia and the wider southern Africa region;
		<ul style="list-style-type: none"> Integrating research findings into national, regional, and international programs and policy strategies; and
		<ul style="list-style-type: none"> Supporting the development and strengthening of capacity for policy research, analysis and outreach of public and private institutions .
PMRC	Research, training and policy development	A public policy Think Tank, PMRC collaborates directly with Government, Media, Private Sector, Academia, Civil Society Organizations and general citizenry in it's work.
WorldFish	Fisheries research	WorldFish is an international, non-profit research organization strengthening livelihoods and enhancing food and nutrition security by improving fisheries and aquaculture. WorldFish focuses on sustainable aquaculture, resilient small-scale fisheries and enhancing the contributions of fish to nutrition of the poor. It is a member of the Consultative Group for International Agricultural Research (CGIAR) and leads the CGIAR FISH Research Program with its HQ in Penang, Malaysia & regional offices in Bangladesh, Cambodia, Egypt, Myanmar, Solomon Islands and Zambia (Africa Regional Office).
National Assembly (Committee on Agriculture)		

d) Forestry & Environment Statistics Stakeholders

Ministry/ Institute	Division / Department	Function
Ministry of Lands Natural Resources and Environmental Protection (MLNREP)		Formulation and implementation of Land administration, Forest Management and Environmental Protection Policies
	Forestry Department	Management, Protection, and conservation of forests to ensure sustainable utilization and management for socio-economic development
	Environment and Natural Resources Management Department	Coordination of the implementation of multilateral and bilateral environment and natural resources programmes and projects
	Planning and Information Department	Development, monitoring and evaluation of policies, legislation and programmes on land natural resources and environment
Zambia Environmental Management Agency		Formulation of policies on all aspects of the Environment and sustainable management of the environment
Timber Producers Association of Zambia		Promotion of sawmilling and value addition among the timber industry players
Community Based Natural Resources Forum		Promoting the creation of secure livelihoods among communities for sustainable utilization of natural resources that include forestry, fisheries, water, agriculture land and wildlife.
Centre for International Forestry Research	Zambia Field Office	Providing research on the most pressing challenges of forest and landscape management using multidisciplinary approach in order to improve the well-being of humans, protect the environment and increase equity
Ministry of National planning and development	Central Statistics Office	To collect and analyze official data on economic and social indicators, disseminated on a timely basis as well as coordinating and providing quality and credible official statistics for use by stakeholders and clients for sustainable development
	Climate Change Secretariat	Facilitate the coordination of all climate change activities being undertaken by government, the private sector and cooperating partners in order to achieve the aims and objectives of the National Climate Change Response Strategy
Ministry of Transport and Communication	Meteorological Department	Establishment and maintenance of a network of surface and upper air stations for the purpose of observing various weather elements;
		Organization of telecommunications system for the rapid collection and dissemination of meteorological data a
		To process and analyze meteorological data for use in the planning of economic development and rational exploitation of natural resources
Ministry of Water and Energy	Water Resources Management Authority	To preserve and protect Zambia's ground and surface water resources and regulate abstraction, allocation, use, development and management of water in a sustainable manner

e) Cross – Cutting Statistics Stakeholders

Ministry/ Institute	Division/ Department	Function
IAPRI (Indaba Agricultural Policy Research Institute)	Research and Outreach	IAPRI's mandate is to utilize empirical evidence to advise and guide the GZM and other stakeholders on agricultural investments and policies. The overarching goal is to identify policies and investments in the agricultural sector that can stimulate inclusive economic growth and reduce poverty. This is achieved through three core operational activities:
		<ul style="list-style-type: none"> Producing trusted, impartial, and high-quality research on agricultural, food, and natural resource policy issues in Zambia and the wider southern Africa region;
		<ul style="list-style-type: none"> Integrating research findings into national, regional, and international programs and policy strategies; and
		Supporting the development and strengthening of capacity for policy research, analysis and outreach of public and private institutions .
Central Statistical Office	Information and Research	Collection, Analysis and Dissemination of Official Statistics
Zambia National Farmers Union		Promote and safeguard members interests. Also collects agric statistics.
ZARI (Zambia Agricultural Research Institute)	Research	Agricultural Research
Ministry of Agriculture	Planning Unit	
University of Zambia	School of Agriculture	Offering Higher Education
F.A.O		Aims at eradicating hunger, food insecurity, etc.
FEWSNET (Famine Early Warning Systems Network)		Provision of Early Warning and Analysis on acute food insecurity.

Annex 2: List of Participating Persons/Institutions

Technical and Financial Support

African Development Bank (AfDB)

International Consultants

Mr. Enock Ching'anda, AfDB
Mr. Enock Ngendakuman, AfDB
Dr. Jeremiah Banda, AfDB
Mr. Richard Harris, AfDB

National Strategy Coordinator

Mr. Patrick Mwendalubi Chuni

National Consultants

Mr. Bwalya Chendauka, National Consultant, Forestry Subsector
Mr. Patrick Ngalande, National Consultant, Fisheries Subsector
Mr. Daniel Daka, National Consultant, Cross-cutting Issues
Mr. Dingiswayo Banda, National Consultant, Crops Subsector
Dr. Mataa Liywali, National Consultant, Livestock Subsector

Central Statistical Office Staff who participated in the development of SPARS_ZAM

Mr. Frank Kakungu
Mrs. Sheila Mudenda
Mr. Antony Silungwe
Mrs. Nelly Nsamwa Mbewe

ACTION PLAN TO IMPROVE STATISTICS FOR FOOD SECURITY, SUSTAINABLE AGRICULTURE AND RURAL DEVELOPMENT IN AFRICA

Annex 3: Results Framework

RESULTS CHAIN	PERFORMANCE INDICATORS			Means of Verification	Risks & Mitigating Actions
	Indicator	Baseline	Target		
IMPACT					
High quality agricultural statistics covering all subsectors are produced in an efficient, timely and sustainable manner and made available to all users	Agricultural Statistics Capacity Indicator	55.40% -2017	80.00% -2023	Calculated and published biennially African Development Bank in 'Progress on the Capacity of African Countries to Produce Timely, Reliable and Sustainable Agricultural Statistics'	
EFFECTS					
1. The production of agriculture statistics is coordinated and harmonised	Integration of agriculture sector in NSDS	Partial integration (NSDS 2014-18)	Full integration (NSDS 2019-23)	National Strategy for the Development of Statistics for Zambia	Best practice in data collection is not followed. Mitigating action: Use co-ordination mechanisms and NSDS process to create peer pressure to maintain standards across the sub-sectors
2. User needs are increasingly met	Percentage of data needs reported as met by stakeholders		75% -2023	IdCA (Annex 4), SPARS_ZAM mid-term and end of plan reports	Stakeholders unwilling or lack capacity to use data for decision making. Mitigating action: Increase appreciation and development of monitoring frameworks in agricultural sector plans
	Agricultural Statistics Capacity Indicator – Dimension 4 (Availability of Statistical Information)	75.80% -2017	96% -2023	Published by African Development Bank (as above)	
3. The collection, processing, reporting and dissemination of agriculture statistics is efficient and effective.	Percentage of assessments of supply of statistics rated of good quality by stakeholders	48% -2017	80% -2023	IdCA (Annex 3), SPARS_ZAM mid term and end of Plan reports.	Calendar of data collection activities is not implemented.
	Agricultural Statistics Capacity Indicator – Dimension 3 (Statistical Methods & Practices)	59.30% -2017	73% -2023	Published by African Development Bank (as above)	Mitigating action: An advocacy and communication strategy will be developed for SPARS_ZAM which together with the full implementation of NSDS2 will raise the profile of agricultural statistics. Some of the stages in the statistics production cycle not funded Mitigating action: Ensure all stages are funded before embarking on activity

RESULTS CHAIN	PERFORMANCE INDICATORS			Means of Verification	Risks & Mitigating Actions
	Indicator	Baseline	Target		
IMPACT					
4. Human resource capacity for agricultural statistical activities strengthened	Number of statistician posts in agriculture statistics units filled by professionally qualified staff	20 -2017	35 -2023	IdCA (section 5.3), SPARS_ZAM mid term and end of Plan reports.	High staff turnover. Mitigating action: Development of capacity building and training programme. Inadequate resources directed at Human Resource Capacity Building. Mitigating action:
	Agricultural Statistics Capacity Indicator – Dimension 2 (Resources – average of human resources, staffing & training)	42.10% -2017	53% -2023	Published by African Development Bank (as above)	Ensure government buy-in HRCBP through advocacy; let Gvt see value in having trained staff.
5. Availability of funds leads to timely implementation of planned statistical activities.	All funds provided or available as a percentage of total funding to implement SPARS_ZAM	55% -2018	80% -2023	SPARS_ZAM mid term and end of Plan reports.	Funds are not available for priority activities. Mitigating action: An advocacy and communication strategy will be developed for SPARS_ZAM which together with the full implementation of NSDS2 will raise the profile of agricultural statistics
	Agricultural Statistics Capacity Indicator – Dimension 2 (Resources – financial resources)	41.70% -2017	88.30% -2023	Published by African Development Bank (as above)	
PRODUCTS					
1.1: Improved coordination, collaboration and networking among stakeholders	Number of NSS technical sub-committee meetings on agricultural statistics per year with representation from all stakeholders	0 -2017	4 2022]	Minutes of NSS technical sub-committee meetings on agriculture	Data management policies are not implemented Mitigating action:
1.2: Improved technical coordination among data producers	Compendium of data collection methodologies for agricultural statistics	No compendium	Compendium published	Minutes of NSS technical sub-committee on agricultural statistics	Use co-ordination mechanisms and NSDS process to create peer pressure to maintain standards across the sub-sectors
	Metadata handbook for agricultural statistics	No handbook	Handbook published	Minutes of NSS technical sub-committee on agricultural statistics	

ACTION PLAN TO IMPROVE STATISTICS FOR FOOD SECURITY, SUSTAINABLE AGRICULTURE AND RURAL DEVELOPMENT IN AFRICA

RESULTS CHAIN	PERFORMANCE INDICATORS			Means of Verification	Risks & Mitigating Actions
	Indicator	Baseline	Target		
IMPACT					
2.1 An integrated census and survey programme is implemented	Percentage of reports available for census and survey activities listed in the Calendar of Data Collection Activities	0	90%	Minutes of NSS technical sub-committee on agricultural statistics	Data gaps not filled. Mitigating action: An advocacy and communication strategy will be developed for SPARS_ZAM which together with the full implementation of NSDS2 will raise the profile of agricultural statistics
2.2 The compilation, analysis and reporting of data including from administrative records is expanded	Percentage of reports available for administrative data activities listed in the Calendar of Data Collection Activities	0	75%	Minutes of NSS technical sub-committee on agricultural statistics	
3.1 Agricultural statistics units have an appropriate and adequate physical infrastructure	Agricultural statistics units have appropriate office space and equipment		By 2023	Minutes of NSS technical sub-committee on agricultural statistics	Management do not react to monitoring reports and do not take
				Annual reports of CSO, MoA, MFL, MLNR, MWSEP, WARMA, ZEMA	remedial action where necessary. Mitigating action:
3.2 Data dissemination and access is improved	Availability of Web portals for dissemination of agricultural statistics	70.70% -2017	By 2019	IT reports to CSO, MoA, MFL, MLNR, MWSEP, WARMA, ZEMA	The proposed new Statistics Act (when passed) will give the new National Bureau of Statistics a specific function to oversee the NSS.
	Agricultural Statistics Capacity Indicator – Dimension 4 (Output dimension – Data accessibility)			100% -2023	Published by African Development Bank (as above)
3.3 Agricultural statistics activities are regularly monitored	Percentage of activities in the Calendar of Data Collection Activities submitting annual monitoring report to NSS technical sub-committee on agricultural statistics	0	75% -2023	Minutes of NSS technical sub-committee on agricultural statistics	

RESULTS CHAIN	PERFORMANCE INDICATORS			Means of Verification	Risks & Mitigating Actions
	Indicator	Baseline	Target		
IMPACT					
4.1 Number of professional level posts for agricultural statisticians increased	Percentage of new statistician posts identified within agricultural statistics units that are added to establishment register	0 -2017	100%	Minutes of NSS technical sub-committee on agricultural statistics Annual reports of CSO, MoA, MFL, MLNR, MWSEP, WARMA, ZEMA	Qualified staff do not apply for vacancies. Mitigating action: Development of capacity building and training programme for existing staff. Trained staff do not have opportunities to apply their skills. Mitigating action: Promotion of secondary analysis of datasets. Local Universities do not offer training in Agriculture Statistics, let alone official Statistics
4.2 Training programmes to develop the capacity of agricultural statistics personnel operational	Training programme Trainee feedback satisfaction rating	None -2017	Training programme published annually >80%	Annual reports of CSO, MoA, MFL, MLNR, MWSEP, WARMA, ZEMA Minutes of NSS technical sub-committee on agricultural statistics	Mitigating action: Utilise regional training centres such as East African Statistics Training Centre
5.1 Collaborations to support sustainable funding for agricultural statistics activities enhanced and strengthened	Percentage of NSS technical sub-committee meetings on agricultural statistics with representation from at least 1 DP	0	100% (2023)	Minutes of NSS technical sub-committee on agricultural statistics	Funding for agricultural statistics activities is not increased. Mitigating action: An advocacy and communication strategy will be developed for SPARS_ZAM which together with the full implementation of NSDS2 will raise the profile of agricultural statistics
5.2 Awareness of the importance of agricultural statistics increased	Percentage stakeholder feedback rating sensitisation event highly	Not collected	>80%	Annual reports of CSO, MOA, MFL, MLNR, MWSEP, WARMA, ZEMA	

ACTION PLAN TO IMPROVE STATISTICS FOR FOOD SECURITY, SUSTAINABLE AGRICULTURE AND RURAL DEVELOPMENT IN AFRICA

Annex 4: Risk & Mitigation

Serial No.	RISKS	PROBABILITY	IMPACT	MITIGATION
1	Stakeholders unwilling or lack capacity to use data for policy and decision making, monitoring and evaluation.	Low	High	There is high appreciation and development of monitoring frameworks in agricultural sector plans – implementation of SPARS_ZAM will strengthen these frameworks.
2	Financial resources are not available	Medium	High	An advocacy & communication strategy will be developed for SPARS_ZAM which, together with full integration into NSDS2, will raise the profile of agricultural statistics for government & Development Partners.
3	CSO and line ministries are unable to establish and implement co-ordination and collaboration mechanisms	Medium	Medium	Build on the current coordination mechanisms such as the SCARS, STWGs & NSDS steering committee
4	Data management policies are not implemented	Medium	Medium	Use the co-ordination mechanism and NSDS to create peer pressure to maintain standards across the sub-sectors.
5	Management do not react to data quality reports and do not take remedial action where necessary.	Low	Medium	The proposed Statistics Act (when passed by Parliament) will give the new National Bureau of Statistics a specific function to oversee the NSS.
6	High staff turnover	Medium	Medium	Development of capacity building & training programme
7	Staff do not have the opportunity to build and apply their skills.	Low	Medium	Promotion of secondary analysis of datasets.

Annex 5: Detailed Action Plan with Budget

								US \$000	
	Activities	Responsibility	2018	2019	2020	2021	2022	Total	
SG1: IMPROVE COORDINATION & MANAGEMENT OF AGRICULTURAL STATISTICS									
OS1.1: Improve coordination, collaboration and networking among stakeholders									
1.1.1	Review and revise agricultural statistics legal & programme frameworks	MOA, CSO, MFL, MLNR, MWSEP, MNDP, MOJ	95	75	25	10	10	215	
1.1.2	Participate in NSS meetings including technical working groups on agricultural statistics and development of next generation NSDS	MoA, CSO, MFL, MLNR, MWSEP	67	62	54	54	39	276	
1.1.3	Improve networking with stakeholders - national and international	MoA, CSO, MFL, MLNR, MWSEP	133	293	120	120	135	801	
OS1.2: Improve technical coordination among data producers									
1.2.1	Develop a metadata handbook to harmonise statistical definitions for the agriculture sector	MoA, CSO, MFL, MLNR, MWSEP	150	50	0	40	0	240	
1.2.2	Develop a compendium of best practice methods for collecting agricultural statistics	MoA, CSO, MFL, MLNR, MWSEP	90	60	0	55	0	205	
1.2.3	Disseminate metadata & methodology handbooks and raise awareness	MoA, CSO, MFL, MLNR, MWSEP	44	144	105	50	40	383	
		Total SG1	579	684	304	329	224	2,120	
SG2: MEET THE NATIONAL & INTERNATIONAL DEMAND FOR AGRICULTURE STATISTICS									
OS2.1: Adopt an integrated census and survey programme									
2.1.1	Integrated census & survey programme – crops[1]	MoA, CSO, MFL,	2,340	2,840	2,340	2,340	8,340	18,200	
2.1.2	Integrated census & survey programme – livestock[2]	MFL, CSO	700	1,200	6,700	700	900	10,200	
2.1.3	Integrated census & survey programme – fisheries	MFL, CSO	1,255	1,275	1,305	1,335	1,355	6,525	
2.1.4	Integrated census & survey programme - forestry & environment	MLNR, CSO, MoE, MTC, MWSEP, MID	255	200	555	305	50	1,365	
OS2.2: Enhance the compilation, analysis and reporting of data from administrative records									
2.2.1	Develop data collection Instruments for environment and climate change	MLNR, MWSEP, CSO	100	75	50	10	0	235	
2.2.2	Train & sensitise staff to collect statistics from administrative processes	MoA, CSO, MFL, MLNR, MWSEP	90	80	160	100	150	580	
2.2.3	Support routine data collection and reporting	MoA, CSO, MFL, MLNR, MWSEP	340	332	335	345	355	1,707	

ACTION PLAN TO IMPROVE STATISTICS FOR FOOD SECURITY, SUSTAINABLE AGRICULTURE AND RURAL DEVELOPMENT IN AFRICA

								US \$000	
	Activities	Responsibility	2018	2019	2020	2021	2022	Total	
2.2.4	Enhance the analysis of data	MoA, CSO, MLNR, MWSEP, MNDP, ZEMA, WARMA	145	145	65	65	85	505	
		Total SG2	5,225	6,147	11,510	5,200	11,235	39,317	
SG3: STRENGTHEN STATISTICAL OPERATIONS & PROCESSES									
OS3.1: Provide appropriate and adequate physical infrastructure									
3.1.1	Acquire/refurbish and equip offices for agricultural statistics activities	MoA, MFL, MLNR, MWSEP, ZEMA, WARMA, MTC	1,117	319	124	74	39	1,673	
3.1.2	Procure transport equipment for data collection (vehicles, motor cycles, boats)	MoA, MFL, MLNR, MWSEP, MNDP, ZEMA, WARMA, MTC	900	640	121	190	90	1,941	
3.1.3	Procure computer and other specialised survey equipment	MoA, MFL, MLNR, MWSEP, MNDP, ZEMA, WARMA, MTC	1,713	575	395	275	388	3,346	
3.1.4	Pilot and introduce new initiatives for data collection / processing	MoA, CSO, MLNR, MWSEP, MNDP, ZEMA, WARMA, MTC	120	170	120	120	170	700	
OS3.2: Improve data access, knowledge management and communication									
3.2.1	Develop & implement data quality, data access and confidentiality policies	MoA, CSO, MFL, MLNR, MWSEP	205	60	50	50	80	445	
3.2.2	Develop and implement an Information, Knowledge Management and Communication (IKMC) Strategy	CSO, MFL	100	70	130	150	150	600	
3.2.3	Establish and maintain data centres and web portals for agricultural statistics	MoA, CSO, MFL, MLNR, MWSEP	172	206	56	56	56	546	
OS3.3: Monitor & improve data quality									
3.3.1	Train agricultural statistics staff and stakeholders to monitor agricultural statistics activities	MoA, CSO, MFL, MLNR, MSWEP	225	120	110	75	85	615	
3.3.2	Ongoing monitoring of statistical activities	MoA, CSO, MFL, MLNR, MSWEP	115	110	100	90	80	495	
3.3.3	Annual data quality workshops and reports	MoA, CSO, MFL, MLNR, MSWEP	70	70	70	70	70	350	
		Total SG3	4,737	2,340	1,276	1,150	1,208	10,711	
SG4: IMPLEMENT A COMPREHENSIVE HUMAN RESOURCE STRATEGY									
OS4.1: Establish and maintain a critical mass of skilled agricultural statistics personnel									
4.1.1	Set up / strengthen agriculture statistics unit	CSO, MFL, MLNR, MSWEP	135	55	25	25	25	265	
4.1.2	Recruit and deploy adequately qualified personnel	CSO, MFL, MLNR, MSWEP	300	270	280	280	280	1,410	
OS4.2: Establish a training programme to develop the capacity of agricultural statistics personnel									

							US \$000	
	Activities	Responsibility	2018	2019	2020	2021	2022	Total
4.2.1	Training of agricultural statistics personnel	MoA, CSO, MFL, MLNR, MWSEP, ZEMA, WARMA	934	646	523	652	535	3,290
		Total SG4	1,369	971	828	957	840	4,965
SG5: DEVELOP SUSTAINABLE FUNDING FOR STATISTICAL OPERATIONS								
OS5.1: Enhance and strengthen collaborations to support sustainable funding for agricultural statistics activities								
5.1.1	Organise advocacy meetings to lobby for funds for agriculture statistics activities	MoA, CSO, MFL, MLNR, MWSEP, ZEMA, WARMA	105	70	70	50	75	370
5.1.2	Organise workshops to prepare funding proposals	MoA, CSO, MFL, MLNR, MWSEP	100	35	60	35	35	265
OS5.2: Advance the awareness of the importance of agricultural statistics								
5.2.1	Hold sensitization events for stakeholders & policy makers	MoA, CSO, MFL, MLNR, MWSEP	87	82	77	67	62	375
5.2.2	Use media to increase awareness and provide education	MoA, CSO, MFL, MLNR, MWSEP, ZEMA, WARMA	81	81	81	81	81	405
		Total SG5	373	268	288	233	253	1,415
	TOTAL SPARS_ZAM		12,283	10,410	14,206	7,869	13,760	58,528
[1] Includes budget provision to include an agriculture module in Population & Housing Census								
[2] Includes budget provision for a joint Livestock and Aquaculture census conducted as a large scale sample survey								

Annex 6: Cited Literature

1. National Strategy for the Development of Statistics (NSDS) for Zambia. 2014 – 2018.
2. The National Strategy for the Development of Statistics (NSDS) for Zambia. Situational Analysis and Statistical Needs Assessment Report. Lusaka.2008.
3. Statistics South Africa. Statistical quality considerations that can be useful for the production of the innovation survey. Presentation to workshop on the review of innovation measurement in South Africa. 9 November 2011.
4. CSO. Report of the 2010/2011 Agricultural Season Post Harvest Survey. 2012.
5. FAO. Livestock Data Collection Manual: Concepts, definitions and classifications. Rome. 2011.
6. GRZ.ASIP - A New Approach to Agriculture in Zambia. MAFF. 1995.
7. Kaplinsky and Morris. A Handbook for Value Chain Research. IDRC.2001.
8. SADC. Animal Health Year Book 2010. Gaborone. 2011.
9. Redman TC. Data Quality. The Field Guide. Boston. Digital Press. 241. 2001.
10. MAL. Role of mobile technology in livestock disease surveillance. A review of the Digital Pen Technology in Zambia. 2012.
11. ADB. Report of the Regional Training Workshop for the Development of SPARS for English-speaking Countries. Zambia, 2015.
12. FAO. SPARS Guidelines. Rome. 2014.
13. Mataa L. Reporting Livestock Disease Information in Zambia. Constraints and Challenges. Tropicultura. 2005.
14. MAL. National Agricultural Policy 2004 - 2015. Lusaka. 2004.
15. MAL. Monitoring and Evaluation Manual. Lusaka. 2013.
16. Strategic plan For Ministry of agriculture and Livestock ,2014 - 2016
17. National Agricultural Policy, 2004-2005
18. Revised Sixth National Development Plan (R-SNDP)
19. Zambia National Agriculture Investment Plan (NAIP) 2014-2018

