



CONFEDERATION OF ECONOMIC ASSOCIATION OF MOZAMBIQUE (CTA)

Assessment of existing quality infrastructure and management for SMEs product calibration and certification, including barcoding

Prepared by:



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Table of contents

1	EXECUTIVE SUMMARY	6
2	INTRODUCTION	9
2.1	Background.....	9
2.1.1	General Objective.....	9
2.1.2	Specific Objectives.....	9
2.2	Scope of the Study.....	10
2.3	Expected Results.....	10
2.4	Limitations.....	10
3	METHODOLOGY	12
4	CURRENT SITUATION ANALYSIS OF EXISTING NATIONAL QUALITY INFRASTRUCTURE	14
4.1	Background.....	14
4.2	Quality Infrastructure Framework Analysis.....	15
4.2.1	Standardization.....	15
4.2.1.1	Voluntary characteristic of standards.....	16
4.2.1.2	The Standards in Agro-business / Agro-industry.....	16
4.2.2	Metrology.....	18
4.2.2.1	Calibration.....	18
4.2.2.2	Verification (Metrological Control).....	20
4.2.3	Conformity Assessment.....	21
4.2.3.1	Certification.....	22
4.2.3.2	Inspection.....	27
4.2.3.3	Testing.....	27
4.2.4	Accreditation.....	28
	Accreditation Bodies.....	28
4.2.5	Barcoding.....	29
4.3	Regional and International Market Access.....	31
	Technical Barriers to Trade.....	32
5	CONCLUSIONS AND PROPOSED STRATEGIC ACTIONS	34
6	REFERENCES	37
	APPENDIXES	38
	APPENDIX A. MOZAMBICAN STANDARDS (NM) CATALOG _VERSION 2018	39
	APPENDIX B. LIST OF MAIN CERTIFIED PRODUCTS	41
	APPENDIX C. INTERVIEW GUIDE (TOPICS BY ENTITY)	43
	APPENDIX D. LIST OF CONSULTED CEPS (CONSELHOS EMPRESARIAIS PROVINCIAIS)	47

List of Acronyms

AfDB	African Development Bank Agriculture Research Institute
APIEX	Investment and Export Promotion Agency
CEPAGRI	Centre for Agriculture Promotion
CTN	Standardization Technical Commissions
CTA	Confederation of Economic Associations of Mozambique
IAF	The International Accreditation Forum
ILAC	International Laboratory Accreditation Cooperation
INNOQ	The National Institute for Standardization and Quality (INNOQ)
IPAC	Portuguese Accreditation Institute, I.P.
IPEME	The Institute for the Promotion of Small and Medium Enterprises
MIC	Ministry of Industry and Commerce
NM	Mozambican Technical Standards
SMEs	Small and Medium Enterprises
WTO	World Trade Organization

List of Tables, figures, and graphs

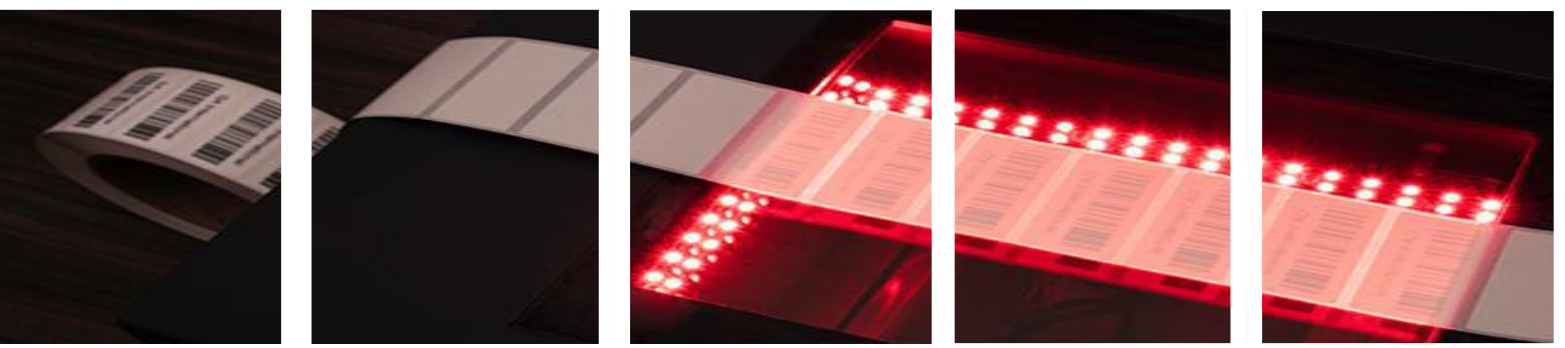
Table 1: List of accredited entities by INNOQ for Calibration Services19

Table 2: List of barcode prices in Mozambique (example)29

Figures

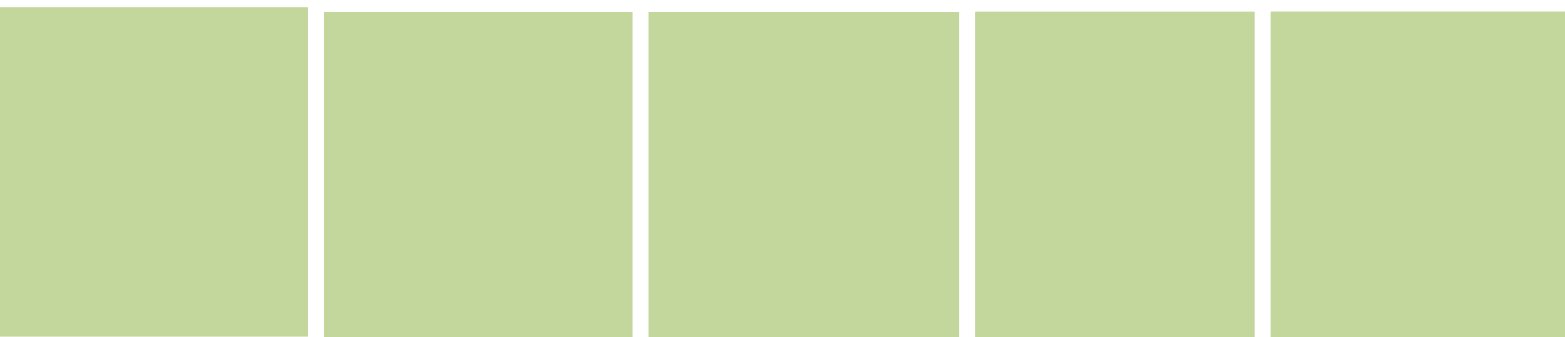
Figure 1: INNOQ’s general certification process (management systems)23

Figure 2: Product certification process25



1

Executive Summary



1 Executive Summary

For the Mozambican SMEs to be able to play a meaningful role in creating jobs in the economy, integrate into national, regional, and continental value chains and contribute a larger share into the country's GDP, they need to be nurtured and supported both technically and financially to build their internal capacities, standardize and diversify their product mix, boost competitiveness, and establish linkages with larger businesses.

It is within this context that Confederation of Economic Associations of Mozambique (CTA)/ African Development Bank (AfDB) has launched the initiative for Strengthening the Productive and Entrepreneurship Capacities of Agro-processing/Agribusiness SMEs Associations to Integrate Regional and Continental Value Chains. To contribute to the achievement of the initiative the Consultant is requested to undertake an Assessment of existing quality infrastructure and management for SMEs product calibration and certification, including barcoding.

The study has used a combination of quantitative and qualitative methods. Quantitative data has been obtained from CTA, INNOQ and IPEME databases, and from other studies. Qualitative analysis was based on the data and information generated by the desk review of existent documents. The team has generated additional qualitative data through semi-structured interviews (remotely and site visits) with key stakeholders. Of the stakeholders interviewed, it was covered: National Institute of Quality Normalization (INNOQ), Ministry of Industry and Trade, APIEX, IPEME and Private Sector representatives (CTA and CEPs), experts and a company in the field of Barcoding, selected Agri-business SMEs with certified product, and general Agri-business / Agio-processing SMEs from the north region and some from the center.

National Quality Infrastructure is the system comprising organizations (public and private) together with the policies, relevant legal and regulatory framework and practices necessary to support and improve the quality, safety and environmental integrity of goods, services and processes. The Quality Infrastructure is necessary for the effective operation of domestic markets and its international recognition. It is important to allow access to foreign markets. It is a critical element in promoting and sustaining economic development, as well as environmental and social well-being. It is based on Standardization, Metrology, Accreditation, Conformity Assessment and market supervision.

In Mozambique, the National Institute for Standardization and Quality (INNOQ) is the recognized central body responsible for defining and implementing the Quality Policy and for coordinating all standardization and quality activities at national level. It was created with the main objective of promoting and coordinating the National Quality Policy through the implementation of Standardization, Metrology, Certification and Quality Management activities aimed at the development of the national economy.

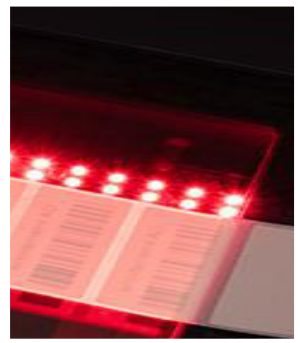
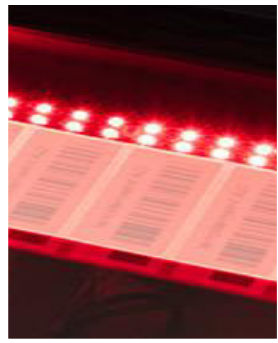
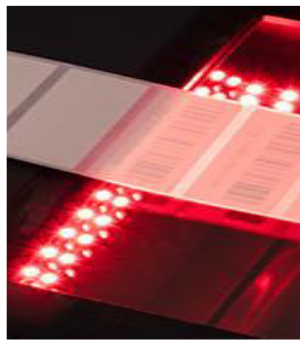
The study concluded that the national quality infrastructure is still in an incipient phase, with the standardization and metrology components (legal and industrial) at a more advanced stage, when compared with conformity assessment (especially product certification) and accreditation, or even barcode, being characterized by issues such as:

- Absence of INNOQ representations outside the country's capital with the capacity to conduct the product certification process and various related activities such as calibrations, which requires the dislocation of its staff (team) and equipment to conduct the process, at the cost of customers and consequently increase the final cost of certification;
- Absence of an internal INNOQ laboratory with sufficient capacity for the tests necessary for the certification of the various products originating from agribusiness / agro-processing, making it necessary to go to other

laboratories (domestic or foreign), such as National Laboratory of Hygiene, Water and Food (*Laboratório Nacional De Higiene, De Águas E Alimentos*);

- Absence of an internationally recognized national accreditation body to accredit the certifying entities for both products and services;
- Total absence of control of the barcode market, from the lack of regulation, definition and segregation of duties, supervision, among others;
- Lack of knowledge of agribusiness SMEs on matters related to the national quality infrastructure, especially on the certification process, its advantages, and challenges, as well as on the need to produce in compliance with standards (NM or other international), or even about the difference between product certification and certification of management systems (quality).

It was also possible to establish a relationship between quality infrastructure and access to the external market and conclude that, although product certification is not in many cases a mandatory requirement for export, it is important that the quality infrastructure is consolidated and be more active to guarantee the quality of the national product, and as a result increase the possibility of acceptance of the product in the foreign market.



2

Introduction



2 Introduction

2.1 Background

Agriculture and agro-processing offers great potential, as Mozambique has excellent agro-climatic conditions with only 15 % of arable land is being utilized. This presents an opportunity for the development of SMEs in agro-processing and agribusiness in the country. Agriculture sector accounts more than 28% of the GDP and is the largest contributor to employment (42%). However, Agribusiness is a sector that holds enormous potential given the extent of Mozambique's unused arable land (85% according to the Centre for Agriculture Promotion, CEPAGRI) and its agro-ecological conditions, especially conducive to surpluses in the northern and central provinces.

The Mozambican Young Entrepreneurs and SMEs could not capture the opportunities presented by international investments during the past decade because of low capacity, unlevelled playing field and the prevalence of uncompetitive and incomplete markets. SMEs need access to a diverse range of services that enable them to become more efficient and competitive, building their capacity and reducing unit costs of production. Very often it is business services that enable a firm to find customers, design products, improve administration, communicate effectively, and access modern technology. The main constraints faced by Young SMEs in Mozambique, among others are include (i) lack of access to financial services (ii) lack of internal capacity and strong competition (iii) lack of skilled labour (iv) lack of access to market opportunities (v) limited capacity to develop new products (vi) lack of market information (vii) low quality of products/services (viii) weak networks and connections with large companies (ix) poor business and financial management skills (x) lack of safety, health and environmental management.

For the Mozambican SMEs to be able to play a meaningful role in creating jobs in the economy, integrate into national, regional, and continental value chains and contribute a larger share into the country's GDP, they need to be nurtured and supported both technically and financially to build their internal capacities, standardize and diversify their product mix, boost competitiveness, and establish linkages with larger businesses.

It is within this context that Confederation of Economic Associations of Mozambique (CTA)/ African Development Bank (AfDB) has launched the initiative for Strengthening the Productive and Entrepreneurship Capacities of Agro-processing/Agribusiness SMEs Associations to Integrate Regional and Continental Value Chains. To contribute to the achievement of the initiative the Consultant is requested to undertake an Assessment of existing quality infrastructure and management for SMEs product calibration and certification, including barcoding.

2.1.1 General Objective

The overall objective of the assignment is to have a baseline on the existing quality infrastructures and management for product calibration, certification, and barcoding for Agribusiness SMEs.

2.1.2 Specific Objectives

The consultancy is expected to meet, among others, the following specific objectives:

- Analyze National Quality Policy and the upgrading of the regulatory framework with focus on relevant aspects for Agribusiness;
- Analyze and summarize the information on quality infrastructures requirements for Agribusiness Product Calibration, Certification and Barcoding, including information on the estimated cost of the product certification process;

- Assess the current status, challenges and readiness of Agribusiness SMEs regarding the product certification process;
- Identify challenges for reaching the quality requirements requested by international and regional markets and capability for proving conformity with those requirements, such as, technical regulations, standards and voluntary and sustainability standards in internationally recognized way, as well as capability to establish efficient certification, testing and calibration mechanisms;
- Prepare assessment report on the existing quality infrastructures and management for product calibration, certification, and barcoding for Agribusiness SMEs.

2.2 Scope of the Study

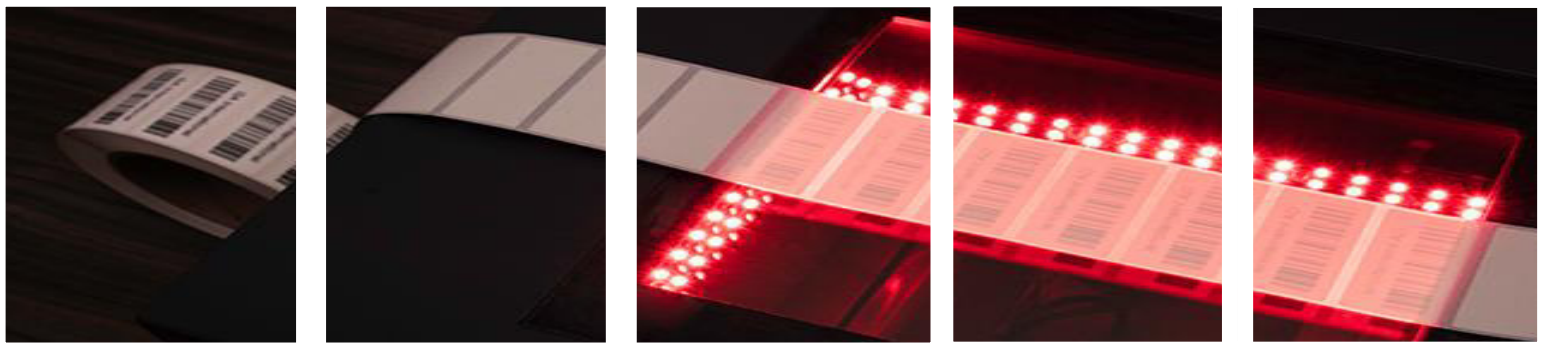
- Conduct a comprehensive review of the national quality infrastructure, including standardization, calibration, certification, and barcoding issues;
- Analyze the national quality infrastructure to certify products from agri-business/agri-processing SMEs. Also address, in summary and lightly, aspects of certification of management systems;
- Understand the current situation and main challenges for access to the external market by SMEs, especially agribusiness SMEs.
- Establish a link between national quality infrastructure and access to the regional and international market.

2.3 Expected Results

- Detailed Information on the Quality Infrastructure for Standardization of Agri-food and Agri-processing Products;
- Roadmap for Product Certification;
- Strategy and required resources to address the gaps in the provision of the quality services identified for Agribusiness SMEs;
- Draft Report on the Assessment of existing quality infrastructure and management for SMEs product calibration and certification, including barcoding;
- Final Report on the Assessment of existing quality infrastructure and management for SMEs product calibration and certification, including barcoding.

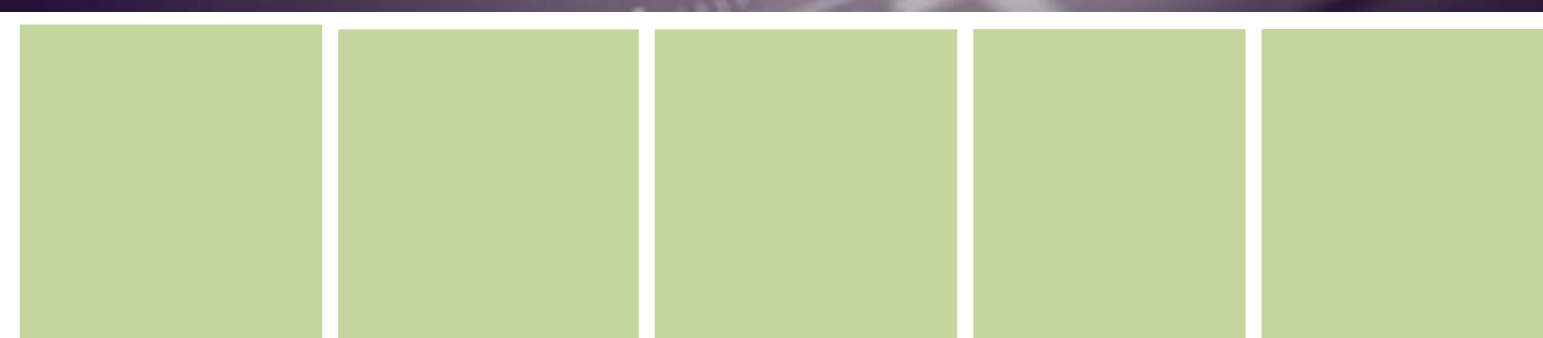
2.4 Limitations

- Difficulty in scheduling consultation meetings with the various actors, mainly with SMEs with certified products or services;
- Delay in obtaining information / responses from some SMEs on the study questions;
- Unavailability of the few agribusiness SMEs with a certified product, for the development of a case study including associated costs.



3

Methodology



3 Methodology

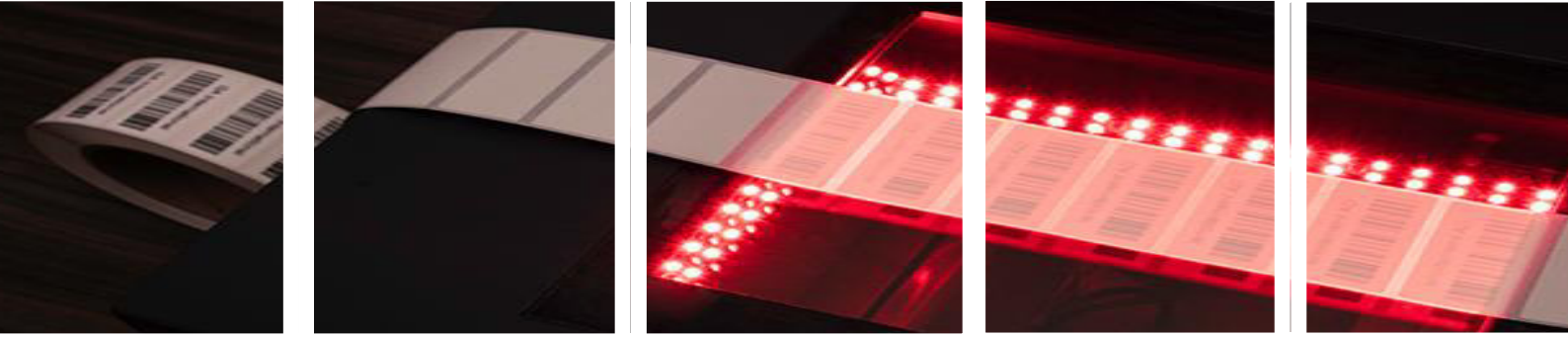
The study has used a combination of quantitative and qualitative methods. Quantitative data has been obtained from CTA, INNOQ and IPEME databases, and from other studies. Qualitative analysis was based on the data and information generated by the desk review of existent documents.

The team has generated additional qualitative data through semi-structured interviews (remotely and site visits) with key stakeholders. Of the stakeholders interviewed, it was covered:

- National Institute of Quality Normalization (INNOQ), Ministry of Industry and Trade, APIEX, IPEME and Private Sector representatives (CTA and CEPs);
- Particular experts and a company in the field of Barcoding;
- Selected Agri-business SMEs with certified product;
- Agri-business / Agio-processing SMEs from the north region and some from the center.

In terms of workflow, the study followed 3 (three) stages, as follows:

Phases	1 Desk Review	2 Interviews with stakeholders	3 Reporting
Key activities	<ul style="list-style-type: none"> ▪ Conducting bibliographic research on digital platforms ▪ Collection of documentary information from official entities, with emphasis on national standards and existing reports ▪ Analysis and systematization of the main aspects 	<ul style="list-style-type: none"> ▪ Identification of relevant entities (public, private and singular experts) and scheduling meetings ▪ Conducting the interviews ▪ Collection of complementary documentary information ▪ Systematization of the main aspects 	<ul style="list-style-type: none"> ▪ Analysis and characterization of the current situation ▪ Identification of challenges and opportunities for improvement ▪ Preparation of the study report



4

Current Situation Analysis of Existing National Quality Infrastructure



4 Current Situation Analysis of Existing National Quality Infrastructure

4.1 Background

With globalization, the access to any market is increasingly demanding, requiring compliance with international standards. In order to respond to these demands, the countries have been making a clear commitment to the development of a national quality system.

For developing countries with plenty of natural resources, such as Mozambique, where more and more so-called “Multi-nationals” are entering, bringing with them a level of natural demands of the sector and the level of maturity of their countries of origin, the development of an effective national quality system is even more important and urgent because to supply the “Multi-nationals” in the national market or to access the international market, compliance with international standards is required.

The “2021 – 2030 National Quality Policy Implementation Strategy (in Portuguese: *Estratégia de implementação da Política Nacional de Qualidade 2021-2030*)” highlights that the establishment of a robust national quality system has several benefits for consumers, producers, and suppliers. Consumers benefit from a system that gives confidence to the products they buy. Producers and suppliers benefit as the use of international standards gives them access to new markets in which they can compete fairly.

Then, what would a National Quality Infrastructure be?

“The system comprising organizations (public and private) together with the policies, relevant legal and regulatory framework and practices necessary to support and improve the quality, safety and environmental integrity of goods, services and processes.

The Quality Infrastructure is necessary for the effective operation of domestic markets and its international recognition. It is important to allow access to foreign markets. It is a critical element in promoting and sustaining economic development, as well as environmental and social well-being. It is based on Standardization, Metrology, Accreditation, Conformity Assessment and market supervision”. (Extrated from: Padrões, Metrologia e Avaliação da Conformidade: Ferramentas para Facilitar o Comércio e Acesso ao Mercado – INNOQ, p.16)

In Mozambique, the National Institute for Standardization and Quality (INNOQ) is the recognized central body responsible for defining and implementing the Quality Policy and for coordinating all standardization and quality activities at national level. It was created with the main objective of promoting and coordinating the National Quality Policy through the implementation of Standardization, Metrology, Certification and Quality Management activities aimed at the development of the national economy.

INNOQ's main responsibilities include the development of national standards, maintenance of the national measurement system (metrology) and measurement traceability to the international system of units and dissemination to the private sector and other government organizations through calibration services. INNOQ performs Certification, Inspection and Legal Metrology. INNOQ's mission includes the aim of improving industry conditions, protecting consumers and the environment, increasing and facilitating domestic and international trade, in order to improve the standard of living and strengthen the country's overall economy.

4.2 Quality Infrastructure Framework Analysis

4.2.1 Standardization

Standardization represents the establishment of rules either by standards or regulations aimed at maintaining criteria, whether safety, environmental, or others, ensuring fair competition between the parties, and protection of the end consumer and the industry.

Standards are, in this context, documented agreements that translate the desired characteristics of a given product or service, such as dimensions, tolerances, weights, processes, systems, best practices or other specifications, ensuring that they comply with its requirements and generate confidence in its buyers and users. (*Estratégia de implementação da Política Nacional de Qualidade 2021-2030, p.20*)

In general, the existence of international standards allows countries easy and efficient access to good practices and established recommendations, seeking to adapt these practices to their reality. These are recognized by the World Trade Organization (WTO) as the basis for international trade and, therefore, ensure alignment between the standards produced and implemented by each country.

Decree n.º 59/2009 of 8 October, establishes that the Mozambican Technical Standards (NM) are prepared based on international standards, except when such international standards or their main elements are an inadequate or ineffective means for achieving the legitimate objectives (national security imperatives, the prevention of dishonest practices, the protection of human health or safety, animal or plant health or life or the environment)

In Mozambique, the NM elaboration process begins with a demand from society and/or need, by the sector involved or even by the regulatory body (Government). The pertinence of the request and need is analysed by INNOQ. If it has merit, it will be taken to the sectoral Standardization Technical Commission for inclusion in the National Standardization Plan of the pertinent study Commission. Otherwise, a Specific Commission or technical subcommittee will be created.

The members of the Technical Commissions must discuss and reach a consensus to prepare the draft Standard. In possession of the Draft Standard, INNOQ submits it to Public Consultation or public inquiry as a way of giving all parties involved the opportunity to examine and issue their comments.

After the time necessary for the public inquiry, the Technical Commission for Sectorial Standardization will hold a meeting to analyse the pertinence or otherwise of the comments received. If there is no obstacle, the Project will be sent for homologation by the General Directorate of INNOQ, where it will receive the initials NM and its respective number. The Standard is then placed in the normative collection of Mozambican Standards.

Currently there are at least about 17 Standardization Technical Commissions, which are organized into 5 groups (sectoral Commissions), however, in matters relating to Agro-Industry, there is CTN2 which is included in the group of the Technical Commission for Sectorial Standardization of Food, Health, Agro-industry, Fisheries, Chemicals, Chemical Engineering and the Environment (CTNSaap) and is responsible for preparation of Mozambican standards related to Agro-industry. CTN2, created by the National Institute for Standardization and Quality (INNOQ), which, like the other CTNs, involves representatives of the Government, research institutions, consumers, economic associations and professionals and individuals, and resulted from the work of consultation with national users.

Another important instrument in standardization is the Technical Regulation, which is a document issued by a Government, which establishes the characteristics of the product or process related to it and the production methods, including the administrative provisions, with which compliance is **mandatory**. This document may also

include or exclusively address terminology, symbols, packaging, marking and labeling requirements and how they apply to a product, process or production method.

Decree n.º 59/2009 of 8 October, establishes that the technical regulations are elaborated by the competent areas (Ministries and State institutions) in which the product, process or service may pose risks to the health and safety of the consumer or to the environment. Regulations should be based on NM, or its absence, on harmonized regional standards or international standards.

It is important to note that all technical regulations must, before approval, be sent to INNOQ, for the purpose of notifying the World Trade Organization (WTO).

4.2.1.1 Voluntary characteristic of standards

Typically, the standards are voluntary, i.e., they are not mandatory by law, and then it is possible to provide a product or service that does not follow the applicable standard in the given market. However, providing a product that does not follow the applicable standard in the target market implies additional efforts to introduce it in that market, which include the need to convincingly demonstrate that the product meets the customer's needs and to ensure that issues such as interchangeability of components and inputs will not represent an impediment or additional difficulty.

4.2.1.2 The Standards in Agro-business / Agro-industry

Standards can be organized/grouped in several ways, however, INNOQ has presented the Catalog of Mozambican Standards (NM) organized by (i) subject and (ii) numerical order.

During the interviews, it was understood that the NM library already has around 2,000 standards, however, the last update of the Catalog of Mozambican Standards date back to 2017/18, with around 900 standards. Based on this catalog of standards, the team carried out an analysis of standards directly related to agricultural products and those related to products directly processed/transformed from agricultural products, in addition to some related to aspects such as labeling, sampling, good practices for hygiene in processing, transportation, packaging, storage, etc.

From the analysis carried out, it was possible to identify around 90 NM related to Agribusiness, such as those listed below:

NM4: 2009 – Cereais – Especificações para o milho, incluindo métodos de análise e amostragem (*Cereals – Specifications for maize, including methods of analysis and sampling*)

NM 5: 2017– Cereais – Especificações para a farinha e sêmola de milho fortificado incluindo métodos de análise e amostragem (*Cereals – Specifications for fortified maize flour and semolina including methods of analysis and sampling*)

NM 6: 2005 – Cereais – Especificações para o trigo e trigo duro, incluindo métodos de análise e amostragem (*Cereals – Specifications for*

wheat and durum wheat, including analysis and sampling methods)

NM 7: 2017 – Cereais – Especificações para a farinha de trigo fortificado incluindo métodos de análise e amostragem (*Cereals – Specifications for fortified wheat flour including analysis and sampling methods*)

NM 21: 2007 – Castanha de caju. Especificações (*Cashew nut. Specifications*)

NM 22: 2007 – Amêndoa de caju. Especificações (*Cashew nut. Specifications*)

NM CAC/ RCP 22: 2009 – Código Internacional Recomendado de Boas Práticas de Higiene para

o Amendoim (*Recommended International Code of Good Hygiene Practice for Peanuts*)

NM 24: 2006 – Papaia – Especificações (*Papaya – Specifications*)

NM 25: 2006 – Ananás – Especificações (*Pineapple – Specifications*)

NM 26: 2007 – Banana – Especificações (*Banana – Specifications*)

NM 27: 2007 – Copra - Especificações e métodos de amostragem e de análise (*Copra - Specifications and sampling and analysis methods*)

NM 43: 2007 – Manga – Especificações (*Mango – Specifications*)

NM 44: 2007 – Litchi – Especificações (*Litchi – Specifications*)

NM CAC/RCP 44: 2007 – Código internacional de prática recomendado para empacotamento e transporte de frutas e hortícolas frescas tropicais (*Recommended International Code of Practice for Packing and Transporting Fresh Tropical Fruits and Vegetables*)

NM 45: 2007 – Chá preto – Definições e requisitos básicos (*Black tea – Definitions and basic requirements*)

NM 46: 2007 – Chá – Amostragem (*Tea – Sampling*)

NM 47: 2007 – Chá – Classificação através de análise do tamanho das partículas (*Tea – Classification through particle size analysis*)

NM 48: 2007 – Óleos e gorduras alimentares não cobertos por normas individuais (*Edible oils and fats not covered by individual standards*)

NM 50: 2007 – Chá preto – Vocabulário (*Black tea – Vocabulary*)

NM 51: 2007 – Farinha de mandioca para uso alimentar – Especificações (*Cassava flour for food use – Specifications*)

NM 52: 2007 – Arroz – Especificações (*Rice – Specifications*)

NM CAC/RCP 53: 2007 – Código de práticas higiénicas para frutas e hortícolas frescas (*Code of hygienic practices for fresh fruit and vegetables*)

NM 54: 2016 – Princípios gerais para a higiene de alimentos (*General principles for food hygiene*)

NM 55:2008 – Bananas verdes – Directrizes para armazenagem e transporte (*Unripe Bananas – Guidelines for Storage and Transport*)

NM 57: 2008 – Código de práticas para o processamento da castanha de caju (*Code of practice for processing cashew nuts*)

NM 58: 2008 – Código internacional de higiene recomendado para nozes arbóreas (*International recommended hygiene code for tree walnut*)

NM 59: 2008 – Código de práticas para a prevenção e redução da contaminação de aflatoxinas em nozes arbóreas

NM 69: 2008 – Laranja – especificações (*Orange – Specifications*)

NM 70: 2008 – Toranja – especificações (*Grapefruit – specifications*)

NM 71: 2008 – Citrinos – Especificações (*Citrus fruits – Specifications*)

NM 72: 2008 – Ananás fresco – armazenamento e transporte (*Fresh pineapple – storage and transport*)

NM 73: 2008 – Milho-miúdo especificações (*Baby Corn specifications*)

NM 74: 2008 – Batata-reno para o consumo e regras de armazenamento (*Potatoes for consumption and storage rules*)

NM 75: 2008- Tomate fresco – Especificações (*Fresh tomato – Specifications*)

NM 76: 2008 – Amendoim – Especificações (*Peanut – Specifications*)

NM 77: 2008 – Código de boas práticas para prevenção e redução da contaminação do amendoim por aflatoxinas (*Code of good practices for preventing and reducing aflatoxin contamination of Peanuts*)

It is important to note that the standards contain a linkage (reference) of the related standards, i.e., there is almost always a need to conjugate the standards.

In appendix A, we present the Catalog of Mozambican standards updated in 2017/2018.

4.2.2 Metrology

Metrology is the science of measurement and its applications involving all theoretical and practical aspects of measurement regardless of its measurement uncertainty and its field of application. As described in the Implementation strategy of the National Quality Policy, p. 21, the existence of equipment that allows validating the accuracy of the measures used is essential to ensure consumer protection in commercial transactions, health, safety and the environment. In fact, metrology guarantees the quality of the final product, giving more confidence to the customer and acting as a differentiator in technological and commercial terms for companies. It also allows reducing the consumption and waste of raw materials, increasing productivity, as well as reducing the possibility of product rejection in the market.

Thus, metrology activity can be understood as all activities that ensure that accurate, reliable measurements are produced, suitable for the purposes for which they are intended and traceable to international standards.

Metrology is divided into **(i) legal metrology**, which is the area of metrology linked to consumer protection from incorrect measurements in commercial transactions, health, safety and the working environment, resulting from regulatory requirements and which apply to measurements, units measuring instruments, measuring instruments and measuring methods, and which are carried out by competent bodies, **(ii) Industrial metrology**, which ensures the proper functioning of measuring instruments used in industry as well as in production and testing processes, through calibration and ensuring traceability, and finally **(iii) scientific metrology**, which deals with research into measurement systems, equipment and methods, as well as the development of measurement standards and their maintenance at the highest levels.

For the present study, the focus will be on Industrial Metrology, which allows focusing on the calibration process and Legal Metrology, which basically involves metrological control, which comprises the verification activities of measuring instruments, materialized measures and pre-production products measured.

4.2.2.1 Calibration

Calibration, as part of industrial metrology, refers to a written process of verifying that an instrument is within its designated accuracy. This is usually done by formally comparing it to a more accurate measurement standard that is traceable to national or international measurement standards and making adjustments to bring the instrument in line with the standard if it falls outside the tolerance limits.

In Mozambique, INNOQ provides calibration services in the following areas: Mass, Temperature, Volume, Pressure, Electrical and Length, and the INNOQ Metrology Laboratory was accredited for the areas of mass, temperature, electrical, pressure and volume, by the Portuguese Institute for Accreditation (IPAC) which is a signatory to the Mutual Recognition Agreement of the International Cooperation for Accreditation of Laboratories (ILAC).

According to Decree-Law n.º 2/2010, of 31 December, the entity that oversees the area of metrology (INNOQ), may delegate competences for the exercise of metrological activities to other public or private entities, through a prior qualification process. The delegated entity must provide proof/evidence of qualification and accreditation in the exercise of its activity.

Thus, at national level there are 12 companies accredited by INNOQ that provide calibration services.

Table 1: List of accredited entities by INNOQ for Calibration Services

#	Company	Location
1	AFRICAN LIFTING MACHINERY ENTITY- ALME, LDA	Maputo
2	EMETRO	Maputo
3	IFS IN-CONTROL	Maputo
4	MASS METER MOZAMBIQUE, SOC. UNIP, LDA	Sofala (Beira)
5	MASSKOT	Maputo
6	PROVA ÍMPAR, LDA	Maputo
7	SASCO MOÇAMBIQUE- SA	Maputo
8	TJ PETROLEUM, LDA	Maputo and Sofala (Beira)
9	ENERGASPETRO	Maputo and Cabo Delgado (Pemba)
10	MARGIN	Maputo and Tete
11	EQUI-LIBRA	Maputo

4.2.2.2 Verification (Metrological Control)

Verification is providing objective evidence that a given item meets specified requirements. It is a “confirmation” process that a certain process has been carried out.

For Metrology, verification is the conformity assessment procedure that results in a marking and/or issuance of a certificate for that verification, thus constituting the main activity of metrological control.

Verification can be performed at various times/periods and can be performed on measuring instruments, such as on materialized measures, called metrological control of measuring instruments and materialized measures. It can also be performed on pre-measured products, called metrological control of pre-measured products.

Verification activities (metrological control) of measuring instruments and materialized measures, according to decree-law 2/2010 of 31 December, in conjunction with decree no. 17/2011 of 26 May, in addition to “Approval of the Model” of the measuring instruments to be used by an entity in Mozambique, includes:

- Initial Verification – verification of a measuring instrument, which has not been previously verified. It is carried out after approval of the model, installation and before using the measuring instruments.

According to the legislation mentioned above, the initial verification is carried out by INNOQ or, within the scope of the delegation of competences, by the delegated entities. However, currently, at national level, only INNOQ carries out this verification.

- Verification after Repair or Modification – is carried out on instruments that have been subjected to repair and/or modification, i.e., after the initial verification, which may be at the request of the user or when it is declared that their verification is no longer valid.

According to the legislation mentioned above, the verification after repair or modification is carried out by INNOQ or, within the scope of the delegation of competences, by the delegated entities. However, currently, at national level, only INNOQ carries out this verification.

- Regular verification (Periodic verification) – subsequent verification of a measuring instrument, materialized measures or measurement system, carried out periodically at specified time intervals (periods), according to procedures established by regulations. It is carried out once a year, at the place (local) where the instrument is used, from January to June throughout the country.

- According to Decree-Law 2/2010 of December 31, which establishes the rules on metrology activity in the country, the activities of Legal Metrology are the sole responsibility of INNOQ which, in the use of its competences, has delegated to the Municipalities and Provincial Directorates of Industry and Commerce only the **Regular verification (Periodic verification)** of pumps of liquid fuel, scales of up to 80 kg and weights.

- Extraordinary verification - Weighing instruments may be subject to extraordinary verification at the request of the user, of any interested party, or on the initiative of the competent authorities even if the previous verifications have already been carried out.

As with the other verifications, the extraordinary is carried out by INNOQ or within the scope of the delegation of competences the delegated entities. However, currently, at national level, only INNOQ performs this verification.

Verification of pre-measured products, in accordance with national legislation, is carried out at the factory or at points of sale, for nominal quantities in the areas of mass and volume, whose labeling requirements must comply with NM 15. Control is carried out on a regular basis by checking by statistical method the actual content of the

pre-measured in the sample and on the average of the actual content of the pre-measured in the sample, except for situations resulting from a complaint.

Products that cannot be evaluated on site, the responsible team collects samples of these products. The examination of the collected samples must be carried out at INNOQ's laboratory or another designated by it, on the date and time indicated, and must be carried out in the presence of the owner or person representing the examined product.

According to legislation, verification of pre-measured products is INNOQ's responsibility.

For a better understanding of this topic, it can be considered that the main or most common activity of verification / metrological control / legal metrology is the **Regular verification (Periodic verification)**, both of pre-measured products and of measuring instruments and materialized measures, since it is in these activities that which regularly seeks to ensure consumer protection against incorrect measurements.

4.2.3 Conformity Assessment

It is the demonstration that the specified requirements, in standards or technical regulations, relating to a product, process, system, person or body are fulfilled. Conformity assessment procedures provide a way to ensure that products, services or systems produced or operated have the required characteristics and that those characteristics are consistent from product to product, service to service or system to system.

The purpose of conformity assessment is to provide confidence to users that applicable requirements for products, services and systems have been met. That confidence, in turn, directly contributes to market acceptance of those products, services, and systems. User confidence can be achieved through cooperation between conformity assessment bodies and/or accreditation bodies, resulting in mutual recognition and promotion of each actor's work across borders.

In fact, each country adopts the conformity assessment system that best responds to its objectives and strategic guidelines. However, it is fundamental that this be harmonized in order to allow the establishment of Mutual Recognition Agreements.

Conformity assessment activities can be carried out by:

- a) First part: when performed by the person or organization providing the object, such as the supplier.
- b) Second part: when performed by the person or organization that has the user's interest in the product, such as the customer.
- c) Third party: when it is carried out by the person or an organization that is recognized as being independent of the person or organization providing the object, as well as the user or customer of the object, who has no interest in the commercialization of the product.

The conformity assessment procedure is mandatory for suppliers of products, processes and services when related to a technical regulation. When the conformity assessment procedure is related to Mozambican technical standards, like any other standard, it is voluntary.

According to national legislation, conformity assessment procedures consist of: (i) supplier's declaration of conformity, (ii) certification, (iii) inspection, (iv) labeling and (v) testing. However, it is important to point out that the three mechanisms/activities considered fundamental are **certification, inspection and testing**, as mentioned in the Implementation Strategy of the National Quality Policy.

4.2.3.1 Certification

The certification of products, processes, services, management systems and personnel is, by definition, carried out by a third party, i.e. by an independent organisation, accredited by a competent body in accordance with the applicable international standards, to carry out conformity assessment. It occurs when the third party attests in writing that there is compliance with the requirements defined in the technical standards, based on audits, collection and testing of samples, among other techniques.

Certification is, in principle, a voluntary activity. However, in some sectors, where justified, it may be mandatory by specific legislation.

The most recurrent/common certifications are those related to the quality of management systems and environmental management systems, Safety, Hygiene and Health at Work (HST) and food safety, based on ISO 9001, ISO 14001, ISO 45001 and HACCP standards, ISO 22000 respectively, with several companies and public bodies certified. However, there are also certifications related to certain products, especially in sectors that are critical to the safety and well-being of the population.

For the present study, the focus is given to the certification of products and as far as possible to agro-business products. Product certification can use multiple certification systems as defined by international standards and conformity assessment organizations. INNOQ carries out product certification according to several international and regional certification systems.

In general, the certification process can be obtained by any entity that proposes, as long as it meets the established requirements. Certification bodies shall be accredited by a national body responsible for accreditation, when it exists, or by regional or international bodies. The topic of accreditation is addressed in the following chapter "Accreditation".

I. Certification bodies accredited - Mozambique

As described in the previous paragraphs, certification can be carried out for services (management systems) and for products. Currently, all over the world and especially in Mozambique, the management systems certification market is considered an open system, where there are several private entities accredited by international organizations to provide certification in different management systems.

Specifically, to date, the team has been able to understand that there are other established entities, in addition to INNOQ, accredited that provide the system certification service, though, it has not been able to obtain a list of these entities, as there is still no database. The implementation of Decree No. 8/2022, of March 14, Regulation for Standardization and Conformity Assessment, is in its initial phase, establishing the obligation of these entities to register with INNOQ.

Regarding product certification, the focus of this study, the market is considered closed, and therefore, INNOQ is the national entity responsible for this type of certification.

INNOQ, to date, only has infrastructure in the country's capital, however, it was reported that organizationally the Center and North Regional Delegations have already been created, which in the future will operate in Sofala and Nampula, respectively. Considering this factor, it should be noted that any company outside Maputo, especially in the Center and North region, which intends to certify its product must support, in addition to the expenses directly related to the service provided, also the logistical expenses of staff and equipment (if applicable).

Product certification is a process that presupposes carrying out tests on the characteristics/parameters of the products to assess compliance with the requirements of the standards, in this context, companies can go to

national or foreign laboratories, whose results are later validated by INNOQ which extracts samples and performs independent tests, as established in the regulation. Currently, INNOQ adopts the National Water and Food Hygiene Laboratory (*Laboratório Nacional de Higiene de Águas e Alimentos*) as a reference, due to the lack of internal capacity, due to the delay in equipping its laboratory.

II. INNOQ's general certification process (management systems)

Figure 1: INNOQ's general certification process (management systems)



Notes:

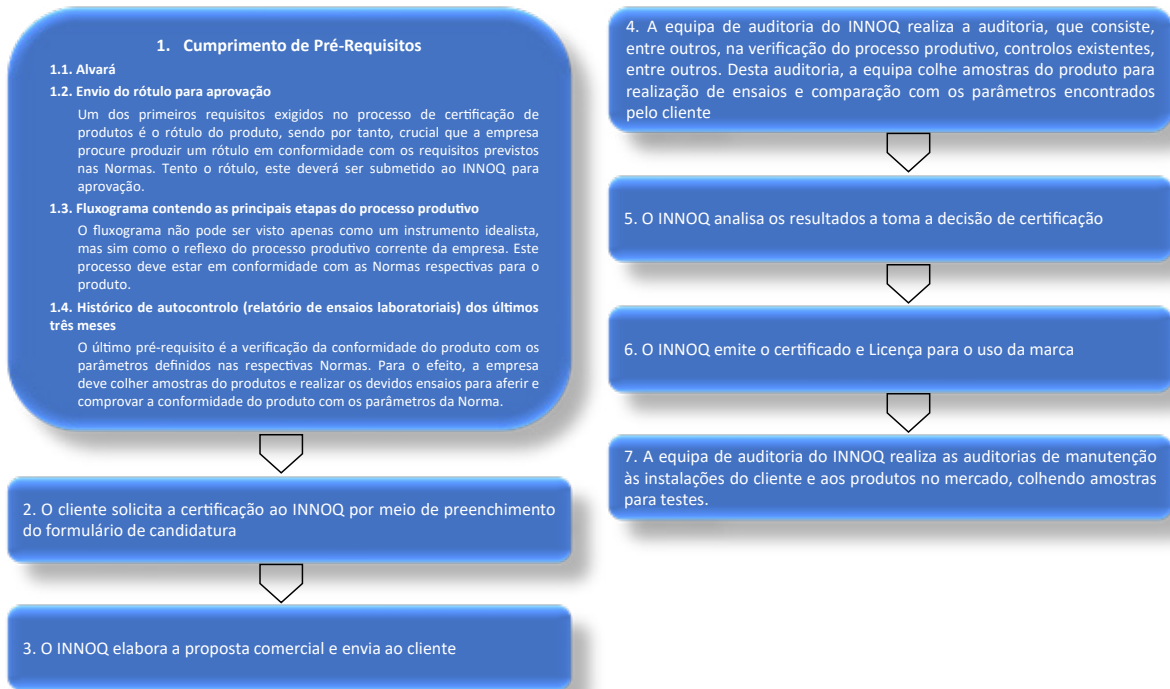
- Generally, the 1st stage of the company's certification process, after expressing interest, is training employees in matters related to the scope of certification, based on NM. As an example, INNOQ's price of training per person is 16,500.00 MZN and the training lasts for about 3 days.
- Based on INNOQ's experience with this kind of certification for Mozambican companies, the 2nd stage, in practice, is commonly called "consulting" and generally occurs before or after the concession audit (1st stage). This stage is called "consulting" because, considering that most companies seeking certification do not operate in accordance with the requirements defined in the Standards, companies tend to contract specialized consultancy services to design and support the implementation of the quality manuals. This step tends to be considered the most expensive, as the cost depends on several factors, from the company's level of maturity, the cost of consultancy depending on the hours spent, among others. One can hypothetically imagine a consultancy lasting 5 months, which will cost at least around 1,000,000.00 MZN
- In the phase of preparing the commercial proposal, the number of days for the concession audit are defined (1st phase and 2nd phase), with the 2nd phase generally having a longer duration and, in many cases, occurring around 1 year after the audit of 1st phase. The commercial proposal is therefore variable depending on the estimated duration. INNOQ charges MZN 22,500.00 per audit day, so assuming that the audits have a joint duration of 5 days, the cost would be MZN 112,500.00 without considering logistical expenses for companies especially located in the center and northern regions.
- After the issuance of the certificate (valid for 3 years), annual follow-up audits are carried out, the duration of which is generally 2/3 (two thirds) of the concession audit and the expenses are supported by the client (certified company).
- With the end of validity of the certificate, the cycle described in the figure above is restarted, involving most of the costs, excepting the "consultancy".

III. The product certification process

As the general certification process presented above, product certification also follows some of the steps presented, however, the product certification process is less time-consuming and expensive, according to the experience described by INNOQ.

Below is a flowchart of the product certification process.

Figure 2: Product certification process



Notes:

- For product certification, one of the first conditions is the existence of Standards for the product, i.e., the certification process will consist of assessing the conformity between the parameters of a product and those defined in the Standard. When a specific NM does not exist, it must be elaborated or applied to an international standard.
- The company must be producing in compliance with the requirements defined in the Standards.
- As presented, a pre-requirement is the approval of the label, however it is important to highlight that the labels must be produced in compliance with the specific standard, and most companies have contract to specialized companies for the service.
- As the general process, expenses are supported by the customer
- Based on INNOQ's experience, for companies that initially invest in the quality of the production process, the costs for certification are lesser compared to systems certification.
- The audit process for product certification takes an average of 1 day, i.e., based on the same daily cost per audit, the total cost excluding logistical expenses would be 22,500.00MZN.
- As the general process, the certificate is valid for 3 years, after which the process restarts. However, follow-up audits are semi-annual.

IV. Main certified products

In Mozambique, the product certification process is yet at a very slow rhythm, when compared to the certification of systems, with the main reasons being the demand of the “multi-nationals” market that operate in Mozambique, the growth of the market in general, as well as the need for commercialization in the foreign market.

According to official information, the main certified national product is water (mineral and purified), which represents around 46% of the total number of certified products (11 out of 24 products), followed by cement, which represents around 17% (4 out of 24 products) and in third place is Hot Rolled Steel, representing 8% (2 out of 24 products). Of the total number of products (24), only 2 (corresponding to 8%) that occupies the third position with Hot Rolled Steel, are agri-industry products. The certified products are (i) Cassava flour called "Rale" branded as "Flor" and (ii) Fortified corn and soy flour mixture (CSB+).

Obs. In the analysis of certified products, the team considered both products with expired certification (expired certificate) and those with valid certification. The complete list of certified products can be consulted in appendix B.

V. Challenges faced by SMEs for Product Certification

Since certification is one of the factors recurrently mentioned by stakeholders as a condition for exporting products or even supplying to the main “multi-nationals”, the team sought to effectively understand what are the main difficulties that Agri-business SMEs face for not certifying the product or completion of the certification process (for those who have started at some point). From these surveys, the main reasons identified are:

- High costs

- Lack of information from SMEs both about the operational requirements/conditions that will be required of them, as well as about financing or co-financing initiatives/programs, or even about the difference between certification of management systems and product certification
- Lack of maturity of production processes, i.e., production according to standards

In addition to the identified reasons, it was possible to verify that most of the SMEs interviewed/consulted had not even tried to obtain information about the product certification process, i.e., they had never tried or had any interest in obtaining certification of their product.

Yet, in this context, it is important to segregate the concept of certification of product quality (carried out by INNOQ) and certification of origin (carried out by the Tax Authority - Customs Department), considering that the mandatory certification for export is the origin of the product, which for most products and/or countries does not require a product certificate. Further on, in point 4.3, the topic of certification of origin will be addressed.

It should be noted that from the analysis carried out, part of the SMEs certified by INNOQ in terms of management systems and around two with products were beneficiaries of certification programs financed or co-financed by different actors. At this point, those certified by private entities are not considered.

4.2.3.2 Inspection

Inspection involves on-site verification that a product, resource or system meets specified criteria. Assessment of Conformity by observation and judgment.

Inspection bodies examine variety of products, materials, processes, work procedures and services in both the private and public sectors. Inspection can be applied with focus on safety, operational performance, and maintenance of safety throughout the life of the product. The overall aim is to reduce the risk to the buyer, owner, user or consumer of the item being inspected.

The inspection mechanism is widely used in second-party conformity assessment when buyers carry it out, either when the product leaves the factory or when it arrives at the buyer's site.

4.2.3.3 Testing

The Test consists of determining one or more characteristics/parameters of a sample of the product, process or service, according to a specified technical procedure. It is the most frequently used form of Conformity Assessment because it is usually associated with other conformity assessment mechanisms, in particular inspection and certification.

Testing laboratories may be operated by a variety of organizations, including government agencies, research and academic institutions, commercial organizations, and standards bodies.

They can be divided into two main categories:

- Laboratories that produce data that will be used by third parties;
- Laboratories for internal use by organizations.

In order to have confidence in the results, the quality and repeatability of the test are essential requirements. In Mozambique, as described in the following subchapter, there is still no national accreditation body, however, the available laboratories operate in compliance with recognized international requirements. They are accredited laboratories.

4.2.4 Accreditation

It is the internationally accepted system that recognizes the competence of testing and calibration laboratories, product certification bodies, quality system certification bodies and inspection bodies.

Another concept of Accreditation is *“a procedure by which a competent body formally recognizes that an organization or person is competent to carry out certain conformity assessment activities, such as tests, calibrations, certification and inspections”*.

Accreditation is an instrument that allows acceptance and recognition of the results of conformity assessment. Accreditation is now increasingly accepted around the world as the most transparent and non-discriminatory mechanism for ensuring the competence of providers of conformity assessment services, in both voluntary and regulatory areas.

For industry and commerce, accreditation facilitates commerce and eliminates the need for repetitive testing, certification and inspection.

For regulators, accreditation provides a reliable/credible and impartial basis for sound decision-making.

For providers of conformity assessment services [testing/calibration laboratories, certification bodies (management systems/product/personnel) and inspection bodies], accreditation is a means of demonstrating their competence to their customers. Accreditation is an effective marketing tool and a passport for bidding to contractors who require independent, verified conformity assessment service providers.

For users of accredited services and general consumers, accreditation is their guarantee of reliable and comparable conformity assessment results. Accreditation increases the reliability of products.

Accreditation requires one hundred percent compliance with the appropriate international standard and full compliance with the rules and procedures established by the international Accreditation bodies, i.e., the International Accreditation Forum (IAF) and the International Laboratory Accreditation Cooperation (ILAC).

Accreditation Bodies

As initiated in the previous paragraph, the two international Accreditation bodies are the International Accreditation Forum (IAF) and the International Laboratory Accreditation Cooperation (ILAC). In addition to international bodies, there are regional cooperation bodies (Africa, Americas, Asia and the Pacific and Europe) and national bodies. The accreditation process is based on the assumption that the organizations are signatories of the mutual recognition agreements of the ILAC and IAF and other regional ones (in the case of the national organizations), and therefore are competent to carry out the accreditation.

The accreditation process of bodies is structured in levels, with international bodies working with regional certification bodies and national bodies are accredited by regional bodies, however, there is the possibility that a national body whose region does not have a regional body, be accredited directly by the international organization. Finally, national accreditation bodies are responsible for accrediting certification bodies.

Mozambique, as it yet does not have a national accreditation body, INNOQ, as a national public certification body, was accredited by the Portuguese Institute of Accreditation (IPAC), which is a member of EA (European cooperation for Accreditation), ILAC and IAF. It is important to emphasize that all certification bodies/companies (public or private) must be accredited.

4.2.5 Barcoding

Barcode is a numerical sequence represented by a drawing of bars with different thickness and positioning. This code can be read by a reader and thus easily identify a product or material.

The use of barcodes is quite consolidated in the international market, however, looking back at the national market, this topic is still very incipient, given that, on the one hand, the country does not have its own entity that licenses barcodes and on the other hand, the country does not even have regulations, clarity on the main responsibilities/competences or any other written information on the subject.

It is important to note that, even though the country is in this situation, there are, however, several national and other foreign companies operating in the national territory that use bar codes on their products and some may even require others to use them, as is the case with supermarkets.

What is the origin and how do companies purchase the codes?

In addition to the market of foreign companies, dominated by supermarket chains, which carry the barcodes of their countries, there are some SMEs in the national market that provide the service of barcode licensing, however, in practice, these companies operate only as intermediaries between the company that owns the product (customer) and the foreign entity that licenses the code (provider).

The origins of the codes vary depending on the facility that the “intermediary” has with the various countries, however, from the interviews, it was understood that they are from South Africa (GS1 South Africa), United States of America (GS1 US), Portugal (GS1 Portugal), Brussels (GS1), Brazil (GS1 Brazil), among others.

From the analysis carried out, in all countries the prices of barcodes vary depending on the quantities, and the licensing companies define packages, in which the more codes, the more affordable the package will be. In Mozambique, as discussed, the market is not yet regulated and therefore it is common to find companies that charge different prices. As an example, the price list of one of the companies operating in Mozambique can be seen below:

Table 2: List of barcode prices in Mozambique (example)

Qty of Codes	Price per Code	Estimated Ammount (Exc. VAT)
1	3,300.00	3,300.00
2	2,633.00	5,266.00
3	2,400.00	7,200.00
4	2,100.00	8,400.00
5	1,800.00	9,000.00
6	1,600.00	9,600.00
7	1,400.00	9,800.00
8	1,200.00	9,600.00
9	1,050.00	9,450.00
10	995.00	9,950.00

In addition to these prices, when a company intends to buy more than 10 codes, prices are usually established by packages, for example, pack of 10 – 100, 100 – 1000, 1000 – 10000.

However, it is also important to note that a company that intends to buy a barcode will certainly need to print it, i.e., include this code on a label and print it, so the cost of the code and the label for the company must be analysed together when preparing the label for the product.

Why does Mozambique not have a national licensing entity?

It was mentioned that both IPEME and the private sector have already made unsuccessful efforts so that the country (a national entity) could join the GS1, based on the representativeness of the market. Note that this acceptance would make the Mozambican market independent and holder of its own prefix.

GS1 is a not-for-profit organization working to standardize business information globally to improve the efficiency and communication of businesses around the world. The best known of these standards is the barcode. Develops and maintains its own standards for barcodes and the corresponding prefixes of the issuing company.

4.3 Regional and International Market Access

In this chapter, based on the final objective of strengthening the capacities of Agri-business SMEs to access regional and international markets, the study sought to analyse and cross-reference information on the current stage of foreign trade, main challenges, and opportunities that agri-business SMEs have to access these markets, establishing a linkage with the aspects of quality national infrastructure.

The first aspect considered a priority when addressing foreign trade is the regulatory environment/export requirements and standardization as a component of the national quality infrastructure. In this context, regarding standardization, the elaboration of standards stands out, which generally follows a standard process in all countries. As described above, the national standards of each country are elaborated on the basis of international standards, thus reducing significant differences between countries. Nevertheless, it is important to note that governments have the right to take measures to pursue legitimate public policy objectives, such as protecting human health and safety, animal and plant life and health or the environment, or protecting consumers from misleading practices as defined in the WTO Agreement on Technical Barriers to Trade.

As for the regulatory environment/export requirements, foreign trade is regulated by Decree No. 56/98 of 11 November, and combined with Ministerial Diplomas No. 202 and 203/98, both of November 12, however, for the purposes of this study, it should be noted that according to official information, exports of Products of SMEs and especially those of agro-business have been growing and one of the factors pointed out is the use of the possibilities created through the instruments that the Government endorses (multilateral, bilateral agreements, programmes, among others), however, there is still a huge challenge for the full use of these possibilities, on the one hand derived from the level of maturity of national SMEs in terms of organization and product quality, on the other hand, compliance with the required requirements, or the low level of information throughout the country.

In this study will not be characterized in detail the procedures and requirements of access to the foreign market, i.e., for export, which can be obtained in the competent national entities. The instruments subscribed to or the benefits for exporting companies are also not presented in detail, but among the benefits, we highlight the reduction or exemption of export quotas and customs duties/fees. Interested companies can obtain information from the Ministry of Industry and Trade, Tax Authority, IPEME, APIEX, among others and on their websites.

In general, the three essential requirements which are repeatedly presented both for exporting individually and using the instruments that the Government subscribes to are: (i) Being an operator of Foreign Trade, (ii) Having the certificate of origin and (iii) Using the Single Electronic Window (Janela Única Electrónica – JUE).

Therefore, part of the questions related to the difficulty expressed by companies in exporting can be answered by the topic of Technical Barriers to Trade, addressed in point 4.2.1.

Another aspect considered a priority for foreign trade is the quality of the product, which as presented earlier is also one of the challenges identified by the official entities, for the non-full utilisation of the opportunities created under the agreements. This aspect refers directly to the certification component of the product, which in essence should be seen as the culmination of a production process according to the appropriate standards and not as the essence of product quality.

As discussed before, product certification is not necessarily the critical aspect, but rather the certificate of origin. In this context, according to the understanding, the production process, especially of the SMEs of agro-business should, first, be based on the Standards, which on the one hand would increase the acceptance of the product by the markets and, on the other hand, would obtain easier certification of the product.

Technical Barriers to Trade

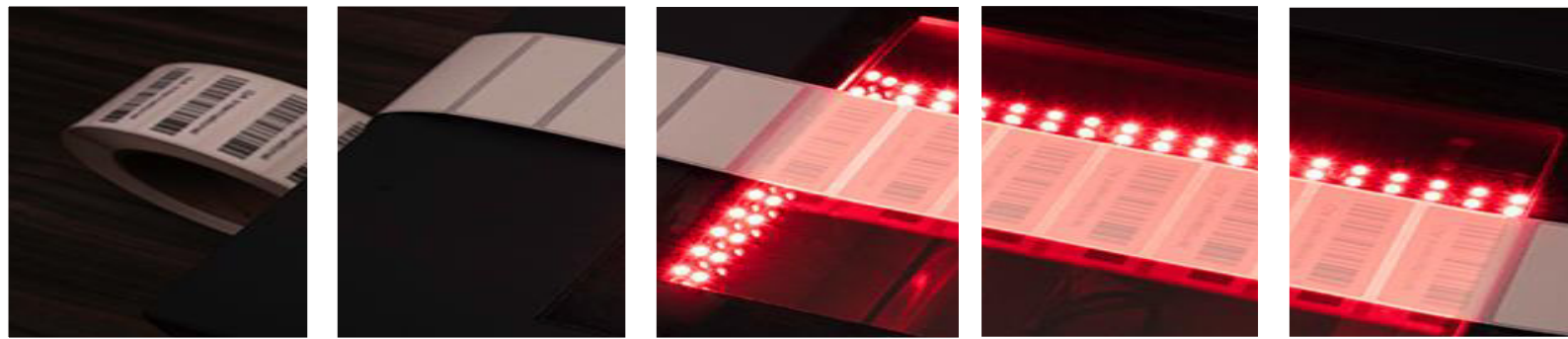
The term "Technical Barriers to Trade" (TBT) refers to mandatory technical regulations and voluntary standards that define specific characteristics that a product must have, such as size, shape, design, labeling/marketing/packaging, functionality, or performance.

The specific procedures used to verify that a product complies with these requirements are also covered by the TBT definition. These so-called "conformity assessment procedures" may include, for example, testing, inspection and product certification activities.

TBTs are generally introduced by government authorities with a legitimate public policy objective in mind – for example, protecting human health and safety, animal and plant life and health or the environment, or protecting consumers from deceptive practices. However, TBTs often have an impact on trade and competitiveness of exporters, and in particular small and medium-sized enterprises (SMEs). Adjusting products and production processes to meet different requirements in export markets, as well as demonstrating compliance with these requirements, increases product costs and time to market and can harm exporters' competitiveness. That's why many of these exporters put technical requirements at the top of their concerns about trade barriers.

According to world trade organisation (WTO) multilateral rules, in particular the WTO Agreement on Technical Barriers to Trade (TBT Agreement), barriers are measures that create unnecessary barriers to trade. In this context, through the TBT Agreement, WTO members have undertaken to ensure that technical regulations are not drafted, adopted or implemented with the aim of creating unnecessary barriers to international trade. Therefore, governments should carry out an analysis that considers the need for the measure adopted to meet legitimate policy objectives.

Importantly, the Agreement in no way prejudices the right of governments to take measures to pursue legitimate public policy objectives, such as those mentioned above, it only aims to ensure that such measures are prepared, adopted and implemented in compliance with some basic principles in order to minimise the negative impact on trade.



5

**Conclusions and Proposed
Strategic Actions**



5 Conclusions and Proposed Strategic Actions

The study concluded that the national quality infrastructure is still in an incipient phase, with the standardization and metrology components (legal and industrial) at a more advanced stage, when compared with conformity assessment (especially product certification) and accreditation, or even barcode, being characterized by issues such as:

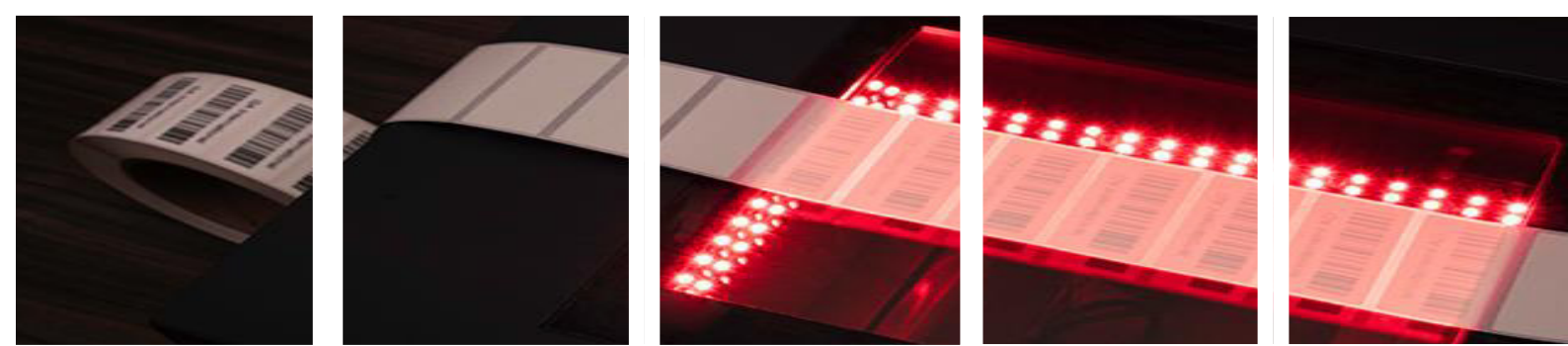
- Absence of INNOQ representations outside the country's capital with the capacity to conduct the product certification process and various related activities such as calibrations, which requires the dislocation of its staff (team) and equipment to conduct the process, at the cost of customers and consequently increase the final cost of certification.
- Absence of an internal INNOQ laboratory with sufficient capacity for the tests necessary for the certification of the various products originating from agribusiness / agro-processing, making it necessary to go to other laboratories (domestic or foreign), such as National Laboratory of Hygiene, Water and Food (*Laboratório Nacional de Higiene, de Águas e Alimentos*)
- Absence of an internationally recognized national accreditation body to accredit the certifying entities for both products and services.
- Total absence of control of the barcode market, from the lack of regulation, definition and segregation of duties, supervision, among others.
- Lack of knowledge of agribusiness SMEs on matters related to the national quality infrastructure, especially on the certification process, its advantages, and challenges, as well as on the need to produce in compliance with standards (NM or other international), or even about the difference between product certification and certification of management systems (quality).

It was also possible to establish a relationship between quality infrastructure and access to the external market and conclude that, although product certification is not in many cases a mandatory requirement for export, it is important that the quality infrastructure is consolidate and be more active to guarantee the quality of the national product, and as a result increase the possibility of acceptance of the product in the foreign market.

As strategic actions, the following are proposed:

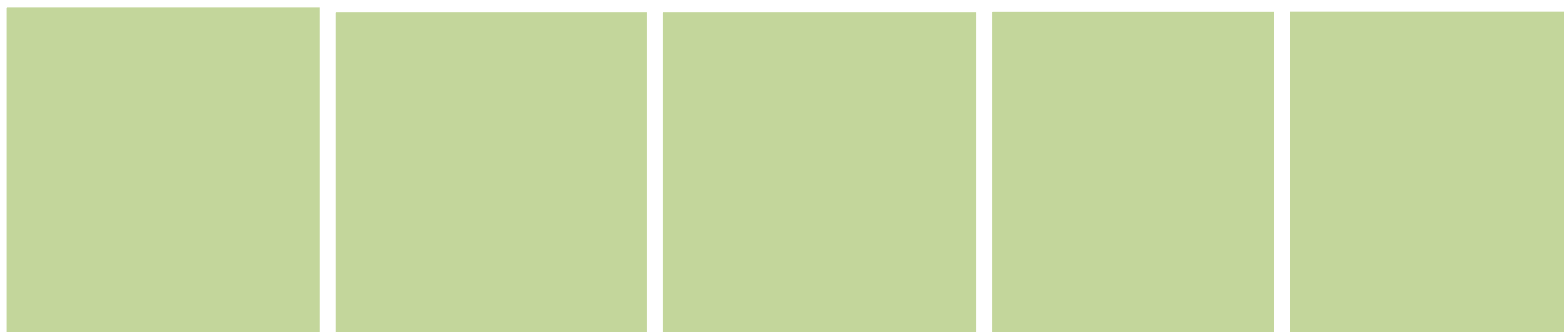
- Ensure the implementation of the strategic actions defined in the “2021-2030 National Quality Policy Implementation Strategy (in Portuguese: *Estratégia de Implementação da Política Nacional de Qualidade 2021-2030*)”, such as:
 - A.1.3. Continuously update Technical Standards
 - B.2.1. Expand Legal Metrology Services
 - B.2.2. Expand Industrial Metrology Services
 - B. 2.5. Consolidate and expand the National Metrology Laboratory
 - C.3.2. Foster Coordination and Communication between Certification Entities
 - C.4.1. Expand and consolidate the Accredited Laboratories Network
 - C.4.2. Reinforce the Response Capacity of Inspection and Supervisory Bodies
 - D.5.1. Create a National Accreditation Body

- 6.3. Reinforce the Legal and Regulatory Framework to Support Accreditation
- 6.4. Review and create Sectorial Technical Regulations
- 6.5. Consolidate the Implementation of the Consumer Protection Law and its Regulation
- 8.1. Create Training Programs for the Private Sector in Quality Topics
- 8.5. Create Media Training Programs to Foster the Dissemination of Quality Topics
- 9.1. Create the “Quality in Schools (in portuguese: A Qualidade nas Escolas)” Program
- Support the private sector in establishing a national body responsible for the barcode market.



6

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Appendixes

Appendix A. Mozambican Standards (NM) Catalog _Version 2018



Moz Standards (NM)
Catalog_2018.pdf

Appendix B. List of Main Certified Products

Produto	Marca	Detentor do produto	Código do certificado
Água Mineral	Montemor	Celfer Lda	INNOQ-CP.001/13
Água Mineral	Oasis	Águas de Ribaué	INNOQ-CP.001/14
Água de Mesa	Mazi	Águas de Ribaué	INNOQ-CP.001/15
Água Mineral	Vumba	Fábrica de Xaropes e Refrigerantes Vumba	INNOQ-CP.001/15
Refrigerante	FROZY	Yaafico Industrial	INNOQ-CP.005/17
logurte	Lactimoza	LACTIMOZA-SOCIEDADE UNIPESSOAL, LDA	INNOQ-CP.006/18
Mistura de farinha de milho e soja fortificada (CSB+)	CSB+	JAM - HELPING AFRICA HELP ITSELF	INNOQ-CP.007/18
Água Mineral	Monte gurue	Chá de Magoma	INNOQ-CP.008/19
Cimento	CIMENTO PORTLAND DE CALCÁRIO – CEM II/B-L 32.5 N E CEM II/A-L 42.5 N	CIMENTO DE CABO DELGADO	INNOQ-CP.009/19
Cimento	CIMENTO PORTLAND DE CINZA VOLANTE CEM II/A-V 42.5 N E O CIMENTO COMPOSTO CEM V/B-(S-V) 32.5 N	CIMENTO NACIONAL, LDA	INNOQ-CP.010/19
Cimento	CIMENTO PORTLAND DE CALCÁRIO – CEM II/B-L 32.5 N E CEM II/A-L 42.5 N	CIMENTOS DE MAIAIA, LDA	INNOQ-CP.011/19
AGUA MINERAL	NAMAACHA	SOCIEDADE AGUAS DE MOÇAMBIQUE, LDA	INNOQ-CP.009/20
AÇO LAMINADO A QUENTE		BAOSTEEL	INNOQ-CP.012/20
RALE DE MANDIOCA	FLOR	UNIDADE DE PROCESSAMENTO DE MANDIOCA-COOPERATIVA JOSINA MACHEL	INNOQ-CP.013/20
TELHAS DE POLICLORETO DE VINILA		FUYUAN INTERNATIONAL LIMITADA	INNOQ-CP.014/20
Água de Mesa	AQUAPLUS	MOPANI INTERNACIONAL LIMITADA	INNOQ-CP.015/21
Cimento		CIMENTOS DA BEIRA	INNOQ-CP.016/21
Agua purificada	FONTE PURA	REFRIGERANTES SPAR, LDA	INNOQ-CP.017/21
Redes Electrossoldadas (Malhassol)		FERPINTA MOÇAMBIQUE, SA	INNOQ-CP.018/21
AÇO LAMINADO A QUENTE		ASHAN IRON & IRON STEEL MOZ, LDA.	INNOQ-CP.019/21
AGUA MINERAL	MONTEMOR	MONTEMOR SARL	INNOQ-CP.020/22
Água de Mesa	SAFI	JM INDUSTRY, LDA	INNOQ-CP.021/22
Água de Mesa	QUICK	QUICK, LDA	INNOQ-CP.022/22
SAL IODADO	PURE CRISTAL, SEAFRESH E TRANSALT THANZI	TRANSALT, LDA.	INNOQ-CP.023/22

Appendix C. Interview Guide (Topics by entity)

Interview Guide

General Objective

The overall objective of the study is **to assess the existing quality infrastructure for calibration and certification of SME products, including barcoding.**

During this phase of diagnosing the current situation, the team of consultants seeks information on: (i) the national regulatory framework (standards/technical regulations) also focusing on the agribusiness sector, (ii) entities (public and private) involved in the calibration, certification and barcode process, (iii) existing infrastructure (equipment, laboratories, etc.) by province/region, (iv) main challenges for SMEs in product certification, (v) main challenges SMEs face to export products.

Main Topics

Stakeholders	Topics
CTA / CEP	<ul style="list-style-type: none"> ▪ Obtain a list/database of agribusiness SMEs ▪ Obtain a list of those that are certified (products/services) ▪ Obtain information about entities in barcode market ▪ Have SMEs shown interest in certifying products/services? What about the barcode? ▪ Main challenges reported by SMEs for product certification, including barcoding ▪ Main challenges reported by SMEs for export or supply to “multinationals” (in Mozambique) ▪ Suggestions to improve the product certification process (in terms of flexibility, costs, etc.)
INNOQ	<ul style="list-style-type: none"> ▪ Obtain a list of entites with certified products and services ▪ National Standards and Technical Regulations related to agribusiness / agri-industry ▪ Composition of the Standardization Technical Commissions, specifically CTN2 – Agro-industry ▪ Obtain regional and international Standards and/or technical regulations ▪ Understand what infrastructures (offices, equipment, laboratories, etc.) exist at national level for the calibration/certification process ▪ Understand which products INNOQ has been certifying or has installed capacity for certification ▪ Understand which entities can certify agribusiness / agro-industry products (geographical location), in addition to INNOQ ▪ Obtain a list of accredited institutions at national level and their geographic location, including the specific activity provided ▪ Understand the product and service certification process, including associated costs

Appendix C. Interview Guide (Topics by entity)

Stakeholders	Topics
	<ul style="list-style-type: none"> ▪ Have SMEs shown interest in certifying products/services? What about the barcode? ▪ What about the main challenges they have reported to complete the certification process ▪ Ongoing or planned actions to support SMEs in the product certification process
APIEX / National Directorate of Foreign Trade	<ul style="list-style-type: none"> ▪ Requirements for exporting products (regional and international level) ▪ Main challenges faced for export, especially of agribusiness products - Has product certification been one of the aspects reported? ▪ Main challenges for SMEs to export or supply to "multinationals" in Mozambique ▪ Ongoing Programs and Actions or planned ones to support agro-industry SMEs to access regional and international markets ▪ Suggestions to make the process of certification of services and products of agribusiness SMEs
IPEME	<ul style="list-style-type: none"> ▪ Understand the current status of the barcode market (regulatory aspects, entities involved, costs, etc.) ▪ Requirements for exporting products (regional and international level) ▪ Main challenges faced for export, especially of agribusiness products - Has product certification been one of the aspects reported? ▪ Main challenges for SMEs to export or supply to "multinationals" in Mozambique ▪ Ongoing Programs and Actions or planned ones to support agro-industry SMEs to access regional and international markets ▪ Suggestions to make the process of certification of services and products of agribusiness SMEs
Specialists / Barcode Companies	<ul style="list-style-type: none"> ▪ Understand the current status of the barcode market (regulatory aspects, entities involved, costs, etc.) ▪ Origin of bar codes that supply the market and the purchase process ▪ How the process of assigning of barcodes to customers works, including associated costs ▪ Main challenges faced by its institutions ▪ Have they provided barcodes to SMEs (focus on agribusiness)? What are the main challenges they have reported for non-adherence (if they have already reported it)
Private Calibration Companies	<ul style="list-style-type: none"> ▪ Geographic location ▪ Main services provided ▪ Understand whether they have provided services to SMEs in agribusiness
SMEs with certified products	<ul style="list-style-type: none"> ▪ Understand how the product certification process was, from the expression of interest to certification, including the positive aspects, challenges and opportunities for improvement ▪ Understand if they have been exporting the products and what is the experience (including requirements)

Appendix C. Interview Guide (Topics by entity)

Stakeholders	Topics
	<ul style="list-style-type: none"> ▪ Suggestions to support agribusiness SMEs in the process of certification and/or export of products
<p>SMEs in the agribusiness sector</p>	<ul style="list-style-type: none"> ▪ Understand if they have already sought to certify their products and what were the challenges ▪ Understand the capacity to adhere to the certification ▪ Understand if they have already tried to export their products or services and what were the challenges ▪ Understand whether they have been providing products or services to large foreign companies, what are the main requirements and what are the challenges ▪ Suggestions to support agribusiness / agro-industry SMEs in the process of certification and/or export of products

Appendix D. List of Consulted CEPs (Conselhos Empresariais Provinciais)

Province	Focal Point Name	Position
Cabo Delgado	Mussa Alfredo	Gestor (<i>Manager</i>)
Nampula	Kendo Mangule	Gestor (<i>Manager</i>)
Niassa	Cristiano Rafael	Gestor (<i>Manager</i>)
Tete	Dalila Portásio	Gestor (<i>Manager</i>)