



A FOOD SAFETY REFERENCE LABORATORY FOR AFRICA

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Background



- Africa needs and deserves safe food 91 million cases of illness in Africa each year (WHO) due to food borne diseases
- 39% of African under 5 years, suffer from stunting and underweight
- Heavy metals, pesticides, other residue concentrations etc. limit value addition and export
- Inadequate infrastructure to detect and therefore manage contaminants
- UN SDG Goal 3, target 1 African Union Agenda 2063 Aspirations call for access to safe, nutritious food and to reduce stunting in children to 10% and underweight to 5%
- AU Malabo Business Plan prioritizing “Enhanced Sanitary and Phytosanitary (SPS) Standards and Compliance” to help African countries have the capacity to implement international SPS standards
- And in light of the ambitious Malabo targets and BIAT, there is an urgency to address the relevant SPS constraints and formulate sound programmes and initiatives.



A model food safety laboratory for Africa
In Partnership, we can go much further

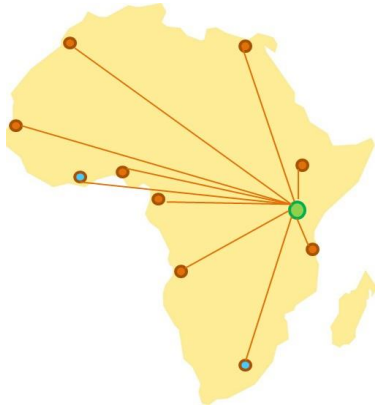


1. African Union Entity
2. Highest international standards
3. Charging for analysis
4. Training and capacity building
5. Governed by oversight committee
6. Accredits other labs
7. Publishes scientific papers
8. Tests recognized
9. Expertise from (accredited) existing industries in Africa



Proposition/ Objectives:

- Financially autonomous Food Safety Reference Laboratory
- Provide specialized analytical services



- Subsequent national labs could specialise in conditions prevalent in their geographies

How can we make it work together?

- AUC agrees to sponsor
- MOU between AUC and designated industry advisor
- Application for funding (*US\$20M ± 2M set-up; US\$8M running cost*)
- AUC works with host state
- AUC leads liaison with RECs, IOs, interested parties
- Joint engagement with academic community
- Designated industry advisor:
 - trains the AUC project manager
 - provides the blueprint for the lab,
 - undertakes regular reviews
 - can advise on team recruitment
 - can help validate

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Status:

- Nestlé presented proposal to AUC
- Second draft of the MOU under review

Next Steps:

- AUC drafts and submits funding proposal
- AUC & Nestlé sign approved MOU
- AUC & Nestlé agree on timeline of project (estimated 24 mths)

Constraints:

- Time to obtain relevant approval and funding

Pan-Africa Food Safety Reference Laboratory

Construction Cost & Operational Cost

Estimated Development Cost (Planning & Construction)

≈ US\$ 21.9M

▪ Pre-construction planning	:	≈ US\$ 2.6M
▪ Project management support	:	≈ US\$ 1.8M
▪ Building	:	≈ US\$ 13M
▪ Laboratory infrastructure*	:	≈ US\$ 2.5M
▪ Equipment and consumables**	:	≈ US\$ 1.5M
▪ Office facilities***	:	≈ US\$ 0.5M

Estimated annual Operational Cost ≈ US\$ 8.6M

▪ Building & utilities*	:	≈ US\$ 0.6M
▪ Depreciation**	:	≈ US\$ 0.8M
▪ Reagents & consumables	:	≈ US\$ 1.5M
▪ Personnel	:	≈ US\$ 2.6M
▪ Services & maintenance	:	≈ US\$ 1M
▪ Lease contracts	:	≈ US\$ 2M

Pan-Africa Food Safety Reference Laboratory

Operational Plan

Operational Plan:

The operation of Reference Lab and the services provided will be rolled out in a stepwise manner.

▪ Year 1

- Provision of restricted Analytical Service to meet 80% of demand
- ISO 17025 Accreditation
- 80% personnel recruited
- Volume tested covers 60% annual running cost

▪ Year 2

- Expand Analytical Portfolio to cover 95% of analytical demands
- 100% of personnel recruited
- Commence P-Test Scheme
- Volume tested covers 90% annual running cost

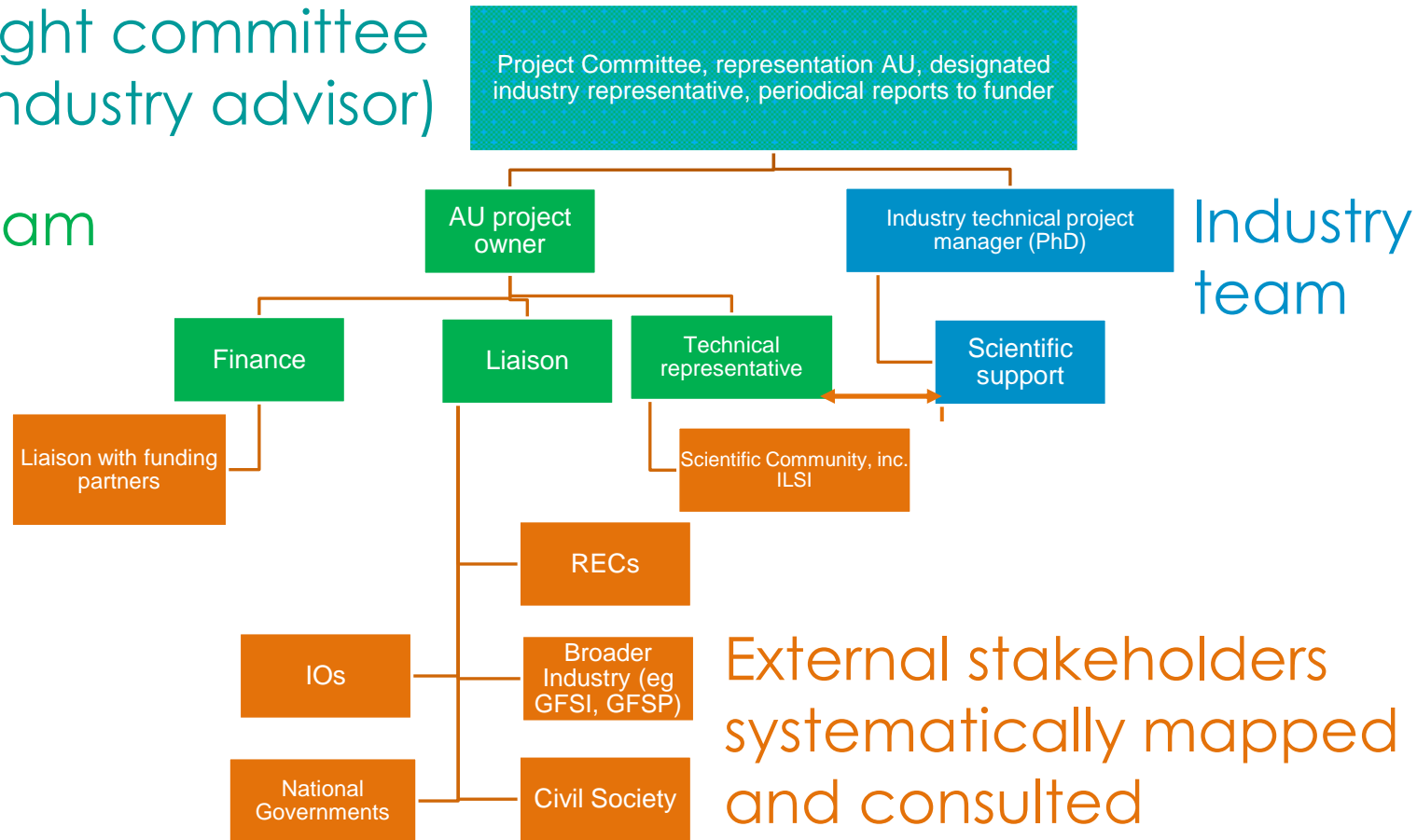
▪ Year 3

- Expand the Analytical Portfolio to cover 100% of analytical demands
- ISO 17042 Accreditation of P-Test Scheme
- Volume tested fully covers annual cost

How would the construction and commissioning be managed and overseen?

Project oversight committee
(AU, funder, industry advisor)

AU project team



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Research



Plans for 2018



- High level endorsement of the project obtained
- MOU between AUC and the designated industry advisors developed within a broader collaboration and signed
- Development of the full proposal and application for funding submitted without losing momentum on interest shown in supporting the project
- Identification of the host member state, obtaining the necessary permissions and legal framework etc.
- AUC leads liaison with RECs, IOs, other interested parties (industry players)
- Engagement with academic community as necessary and industry advisors
- Designating industry advisors

“Enhancing agricultural transformation and environmental sustainability for food security and employment for Africa’s Youth”

QUESTIONS?

Backup slides: Nestlé experience

Pan-Africa Food Safety Reference Laboratory

Mission, Physical Description, Scope of Activities, Customer Base & Sample Volume, Estimated Income, Operational Plan

Mission:

- To be the Food Safety, Nutritional and Microbiological Analytical Laboratory of reference in Africa.
- Enhancing the availability of safe foods for consumption and trade in Africa.

Physical description:

- Floor surface area approximately 1800 m² over 3-4 floors
- High energy efficiency with independent power and water supply
- Modular modern design (*with flexible capacity for potential future expansion*)

Scope of Activities:

- Providing Analytical Services for the following:
 - Chemical Contaminants (e.g. Toxic elements, Mycotoxins, pesticides, etc.)
 - Nutritional Composition (Vitamins, Minerals, Proteins, etc.)
 - Microbiological (Food & Environmental Pathogens)
- Providing Accredited Proficiency Testing Services (*including supply of Certified Reference Materials*).
- Develop Food Composition and Contaminants database.
- Promote education in Food safety and nutrition by hosting workshops, seminars and training programs, etc..

Customer Base – Minimum estimation of 240 potential Customers:

- National Food Standards/ Regulatory and Testing Institutions in Africa.
- Agro-processing Industry (*public & private*)
- Contract Research and Academic Institutions

Potential Sample/ Analytical volume (per annum):

- Chemical Contaminants: > 6000
- Nutritional Composition: > 12000
- Microbiological Pathogens: > 60000

(The Analytical Capacity of the laboratory is potentially 5x the volumes estimated above)

Potential annual income based on estimated demand ≈ US\$ 9.6M

- Chemical Contaminants: ≈ US\$ 1.8M
- Nutritional Composition: ≈ US\$ 1.8M
- Microbiological Pathogens: ≈ US\$ 6M

(Income from other services such as P-Test and training courses have not been included in this estimate. This estimated figure represents a US\$ 1M surplus which can be used to subsidise training and support for National Laboratories throughout Africa)

Pan-Africa Food Safety Reference Laboratory

Developmental Phase – Planning, Construction, Equipment Installation, Recruitment & Training

Key activities relating to the **planning**:

- Determine the location of the laboratory building
- Prepare the architectural design and plans for the building based on the location
- Perform geo-technic study as well as environmental risk and impact assessment
- Obtain building regulations and construction approval
- Selection of suppliers and contractors

Key activities relating to the **construction**:

- Ensure all construction conforms strictly to the building specifications
- Close monitoring of daily construction activities to assure conformity to building plans
- Ensure all work is carried out in a safe manner and in safe conditions to prevent accidents and injuries
- Review the progress of the construction at each stage, making modifications if required

Key points relating to the equipment **installations**:

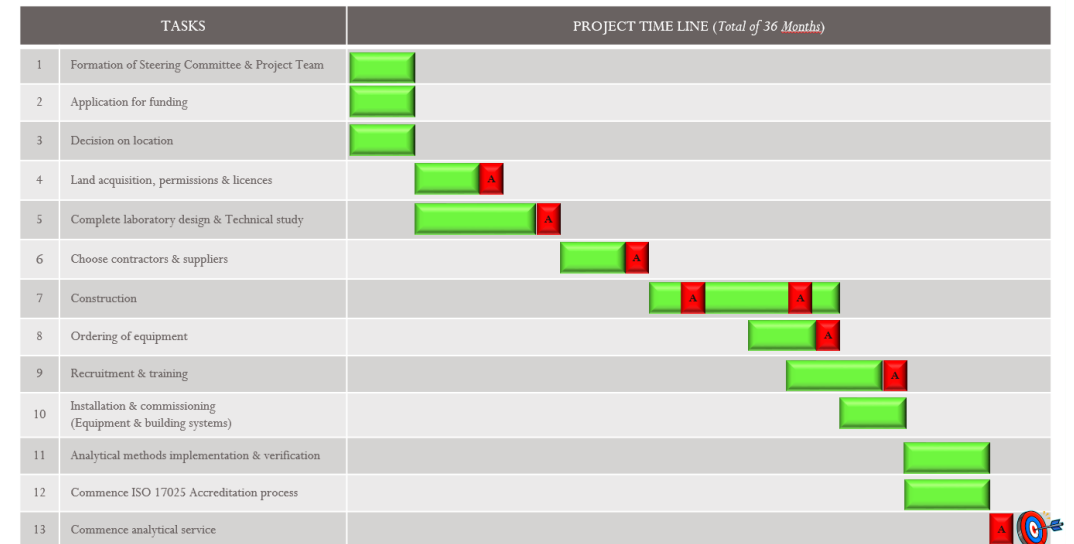
- Verify that the lab environment conforms with the specifications
- Ensure all safety/ protection and power back-up systems are functioning correctly and operational
- Ensure that all installations are carried out by competent certified technicians
- Ensure the equipment / instruments are fully commissioned and performance verified before sign off.

Key points relating to **recruitment**:

- Clearly define the profile required based on the job function
- Recruitment must be based on suitability for the specific roles
- Encourage diversity with the staffing

Key activities relating to the **training**:

- Training should commence at least 6 months before completion of the laboratory
- Training can be done at Nestlé laboratories (*based on MOU agreement*)
- The trained staff must be able to implement methods and systems and train others



- Steering Committee Approval

Please note that the timeline from ground breaking to the first sample being analysed is estimated to be 24 months

The quality-demand-opportunity cycle

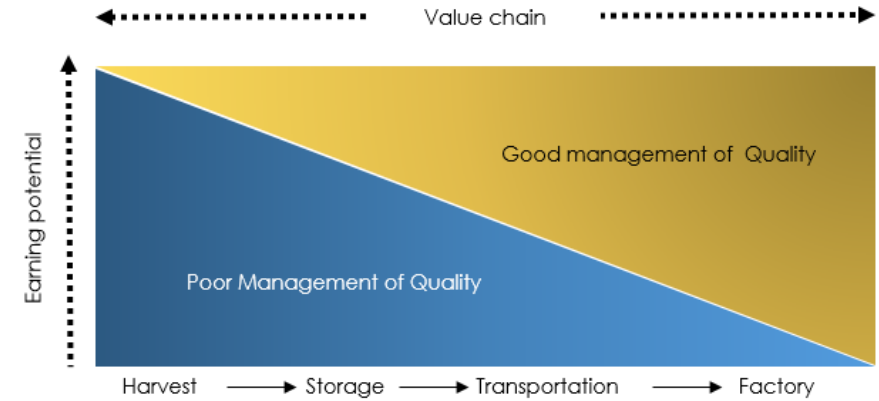
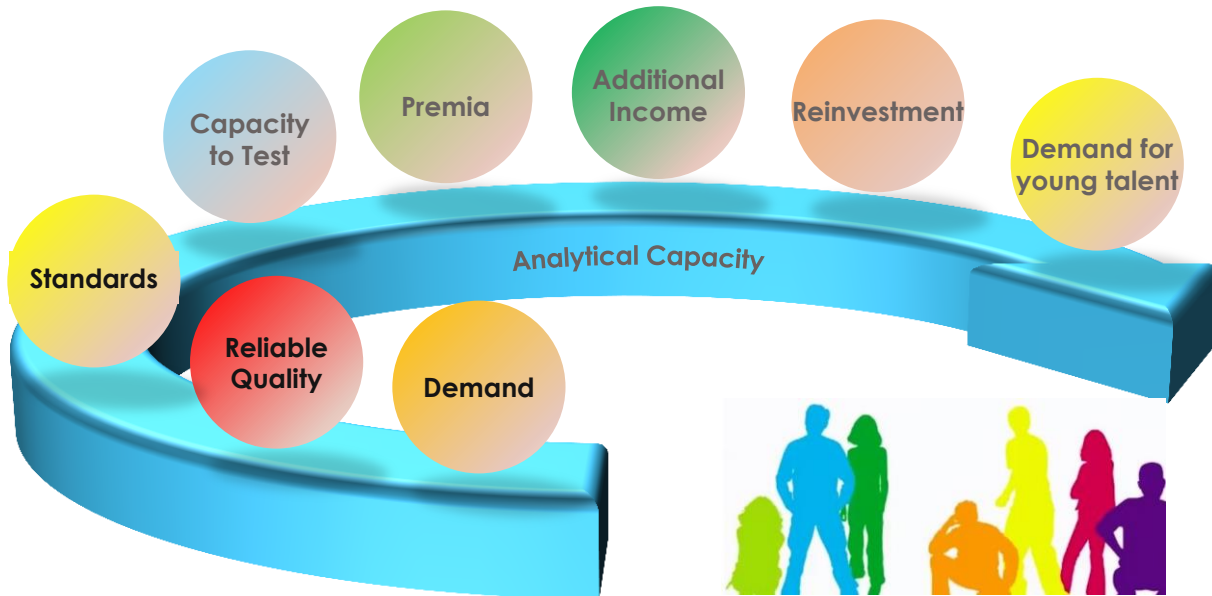
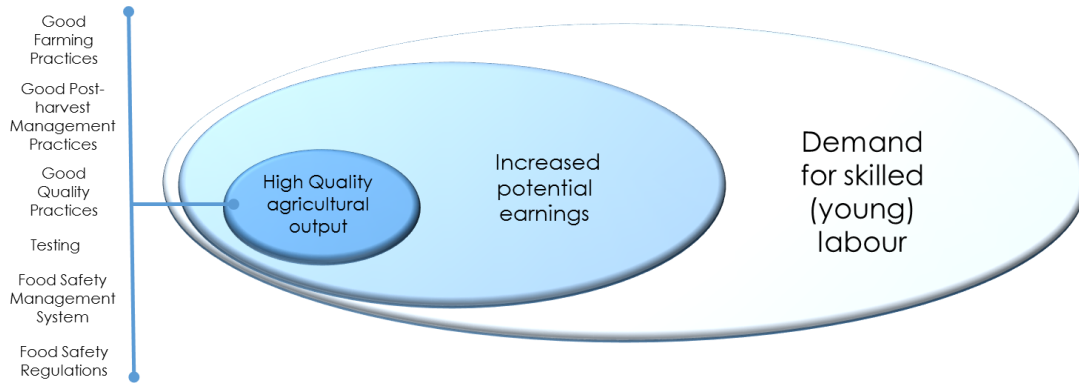


Figure illustrates the relationship between the earning potential for grains and quality management.



Figure illustrates the reduction of food waste as a function of Quality Management.

Investing in African Agricultural Quality, example 1:

Grains Quality Improvement Project (Ghana and Nigeria)

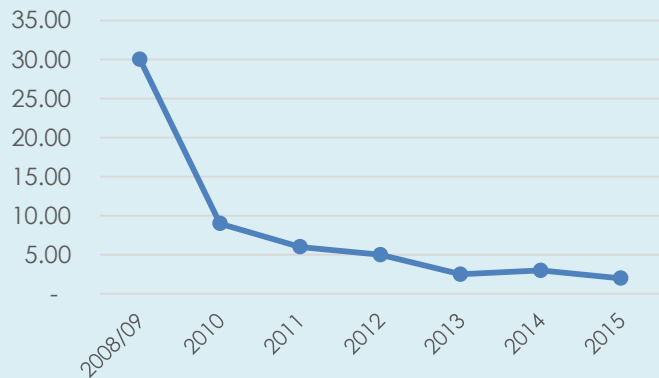
Business Benefit:

- Improved quality and safety of raw materials used in our factories
 - percentage rejection rate decreased from 30% in 2008/09 to 3% in 2015
- 100% locally sourced good quality (meet specification) grains for GOLDEN MORN and CERELAC

Societal Benefit:

- Over 80,000 farmers trained in awareness of health risks due to Mycotoxin contamination in food
 - 150 communities trained in contamination prevention
 - About 50% are women
- Reduced loss, Increased yields and revenue for farmers

Percentage Factory Gate Rejection Rates



	Male	Female	Total trained
2010	6,218	6,213	12,431
2011	5,407	5,032	10,439
2012	10,326	9,683	20,009
2013	2,739	2,979	5,718
2014	7,301	7,359	14,660
2015	15,922	10,400	26,322



Dec 2016:
Nestlé and USAID partner for high quality maize in Ghana

USAID ADVANCE and Nestlé Ghana will work together to build the capacity of farmers and aggregators in the three Northern regions to ensure farmers produce maize that meets Nestlé's quality standards. The objective is to increase quality of overall grains supply in Ghana, by training 113,000 farmers by 2018.

“I can now pay for my children’s school fees. I can also afford to make their school uniforms now I have extra income.”



Alidu is a maize farmer in Gushie, an agrarian community of Tamale, the main city in the northern belt of Ghana.

Alidu's family has been saddled with unsafe and unhealthy agricultural practices, which have impacted negatively on their production capabilities and their health status.

Alidu joined the Nestlé Grains Quality Improvement Project in 2010. She is one of the 24,000 women who have received training on the project to improve their capacity and their livelihoods.

Alidu has been able to transform her 4-5 bags per acre production to 10-12 bags, after using skills taught by Nestlé agronomists.



Alidu Samata
40 years old
Mother of 7

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“Nestlé has taught me how to avoid producing mouldy maize, and now I can support my family.”



Fatimata is a maize farmer in Gushie, an agrarian community of Tamale, the main city in the northern belt of Ghana.

Since she joined Nestlé's Grain Quality Improvement Project, Fatimata is able to harvest and sell between 9-12 bags of maize from an acre of land, instead of the five bags of maize she used to sell. She has learnt that the quality of the grains and the way it is stored can impact on her revenues and her family's health. She used to earn 30 Ghanaian Cedi (about USD 12.3) and now she can earn up to 60 Ghanaian Cedi (about USD 24.6).

Fatimata is happy that she can now contribute financially and support her family, especially her children.



Fatimata Shadu
35 years old
7 children

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Investing in African Agricultural Quality, example 2:

The Nestlé Prize in Creating Shared Value - encouraging young African agripreneurs

2016 winner: Agro-Hub, Cameroon



2016 runner-up: Natural Extracts Industries, Tanzania



2014 winner: HoneyCare, South Sudan



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Research