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# APPLYING THE PRIORITISING SPS INVESTMENTS FOR MARKET ACCESS FRAMEWORK TO EAST AFRICAN REGIONAL TRADE:

## SUMMARY REPORT


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# APPLYING THE PRIORITIZING SPS INVESTMENTS FOR MARKET ACCESS FRAMEWORK TO EAST AFRICAN REGIONAL TRADE

## 1.0 Introduction

Sanitary and phytosanitary (SPS) measures are applied by governments to control food safety, plant health and animal health risks, and to prevent incursions of exotic pests and diseases. In turn, such measures act to protect human health, promote agricultural productivity and facilitate the international marketability of agricultural and food products. Whilst the illegitimate use of SPS measures undoubtedly remains a problem, despite the obligations and rights laid down in the World Trade Organization (WTO) Agreement on Sanitary and Phytosanitary Measures, arguably the biggest challenge for developing countries is achieving and maintaining the required compliance capacity, both within the public sector and in exporting firms. Historically, these challenges have been mainly faced in the context of agri-food exports to industrialized country markets, but increasingly are also an issue in trade between developing countries.

In making efforts to expand their agri-food exports and to reposition themselves towards higher-value markets, developing countries can face a daunting array of SPS capacity-building needs that outstrip available resources, whether from national budgets or donors. Inevitably, therefore, hard decisions have to be made in order to prioritise particular capacity-building needs over others. At the same time, the drive towards greater aid effectiveness requires that beneficiary governments are able to present coherent and sustainable plans for capacity-building. Whilst decisions have to be made between competing needs on an on-going basis, such decisions often lack coherence and transparency, and there are accusations of inefficiencies in the allocation of resources, whether by developing country governments or by donors.[1]

Consequently, the Standards and Trade Development Facility (STDF) of the World Trade Organization (WTO) has developed the framework, "Prioritizing SPS Investments for Market Access (P-IMA)", based on Multi Criteria Decision Analysis (MCDA), to help inform and improve evidence-based SPS capacity building planning and decision-making processes. The STDF, in collaboration with USAID and COMESA, initially piloted the framework in Belize, Ethiopia, Malawi, Mozambique, Namibia, Rwanda, Seychelles, Uganda, Vietnam, Zambia, and Madagascar, to prioritize SPS investment options and leverage resources for capacity development under relevant investment frameworks. Currently, the COMESA Secretariat is also implementing the framework in Ethiopia, Kenya, Malawi, Uganda and Rwanda.

The P-IMA framework provides a multi-stakeholder, evidence-based approach of mainstreaming SPS capacity building investment needs into national investment frameworks for agriculture, trade, health, and/or environment. In light of this, the TradeMark East Africa (TMEA) is applying the framework to regional agri-food trade in the EAC region. Thus, this report provides the outcomes of the application of the P-IMA framework to East Africa regional trade.

[1]Henson, S.J., and Masakure, O., (2009). *Guidelines on the Use of Economic Analysis to Inform SPS-related Decision-Making*. Standards and Trade Development Facility, Geneva.

## 2.0 The P-IMA Framework

The P-IMA framework employs a Multi Criteria Decision Analysis (MCDA) tool that engages a multi-stakeholder approach to identify SPS capacity gaps, cost and rank the investment needs based on agreed economic and social defined decision criteria. The aim is to generate a set of evidence-based SPS priorities that gives the best return on investment and can be mainstreamed into national investment frameworks and/or leverage external resource mobilisation. The rationale behind the framework is that priorities need to be established on the basis of a range of economic and social considerations that may, at least on the face of it, be difficult to reconcile. In turn, this assumes that the rationale for investments in SPS capacity-building is not compliance with export market SPS requirements per se, but the economic and social benefits that might flow from such compliance, whether in terms of enhanced exports, incomes of small-scale producers and/or vulnerable groups, promotion of agricultural productivity and/or domestic public health, etc. The framework provides an approach for different decision criteria to be taken into account, even though they may be measured in quite different ways.

In this regard, the framework aims to:

- Identify the current set of SPS-related capacity-building investment options in the context of existing and/or potential exports of agri-food products. Below this is termed the choice set.
- Determine the decision criteria that should drive the establishment of priorities between SPS-related capacity-building investment options and the relative importance (decision weights) to be attached to each.
- Prioritize the identified SPS-related capacity-building investment options on the basis of the defined decision criteria and decision weights.
- Examine the sensitivity of the established priorities to changes in parameters of the framework.

The framework employs a highly structured process that aims to be applied in a wide variety of contexts and to provide various diagrammatic and numerical outputs. The framework and its practical implementation are described in detail in a user's guide. Below in Figure 1, a relatively brief outline of the seven stages of the framework is provided, with a particular focus on how they were implemented in Rwanda.

## 3.0 Applying the P-IMA Framework to East African Regional Trade

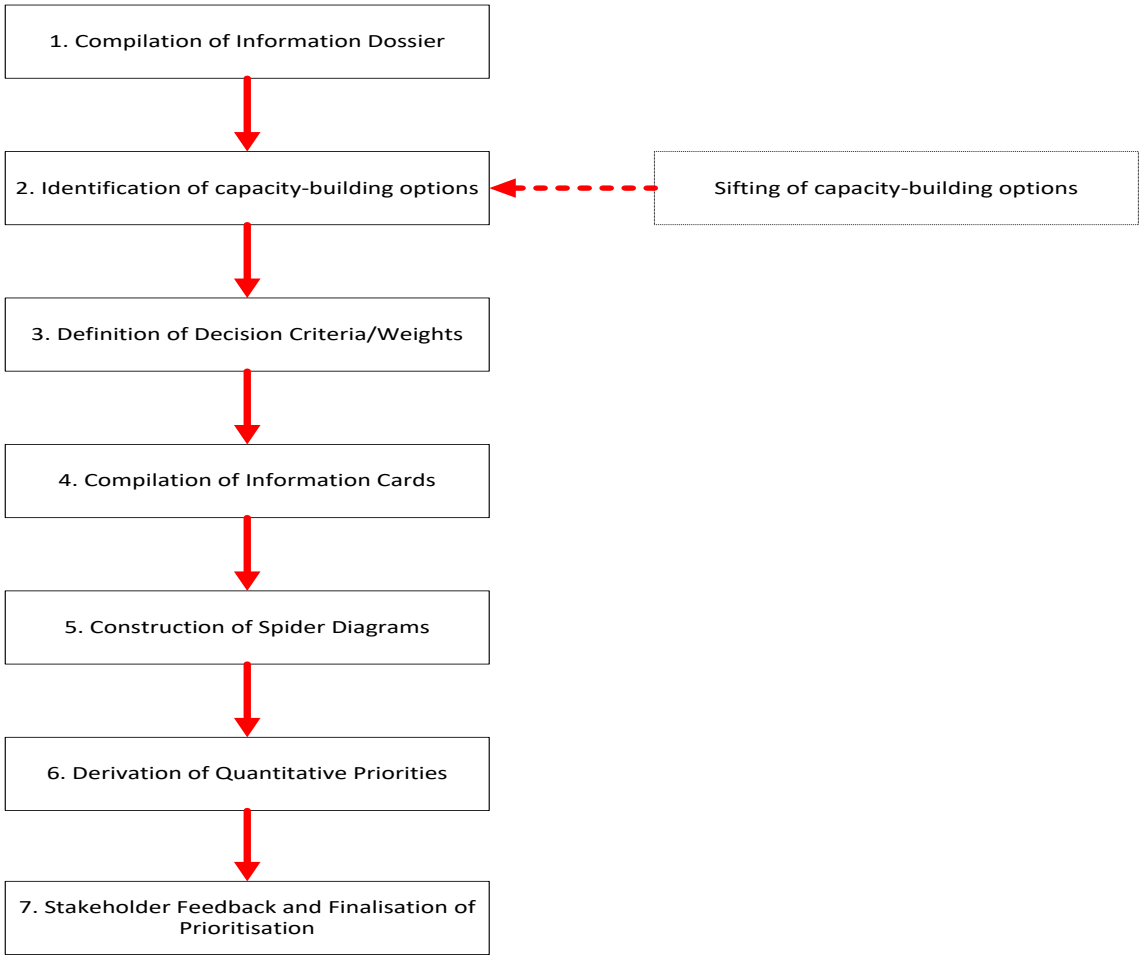
This section outlines the process by which the P-IMA framework was applied to regional trade in East Africa step-by-step. This report provides a summary of the results of this analysis. Note that descriptions and the information sheets for the capacity-building options and further results are provide in the fulle report.

### Stage 1: Compilation of Information Dossier

The first stage of the analysis involved the compilation of a comprehensive dossier of existing information on the SPS challenges facing agri-food exports and the associated capacity-building investment needs. In so doing, the aim was to ascertain what work had already been undertaken to identify capacity-building options and the definition of priorities for related investments. Consequently, this study undertook a background paper on regional agri-food trade in the East Africa region and the importance of SPS measures, which covered SPS-sensitive trade and current prevailing

SPS compliance challenges. A great aspect of the outcomes from that background paper are incorporated into this report.

**Figure 1. Stages of the P-IMA Framework**




## Stage 2: Definition of Choice Set

In order to identify the SPS capacity-building options to be considered in the priority-setting framework, a two-day stakeholder workshop was held from 19-20th November 2019. The workshop comprised of training of key stakeholders on the P-IMA framework and the D-Sight Software, which powers the P-IMA framework, and a dedicated session to identify each of the six EAC countries' specific SPS investment needs and Capacity Building Options (CBOs), Decision Criteria and Weights. Participants were presented with a series of cards and asked to identify the SPS capacity-building needs that is mutually-exclusive and consist of four key elements in Figure 14. First, the product(s) affected. Second, the specific SPS issue faced by exports of this product(s). Third, the market(s) where these SPS needs were an issue. Fourth, the CBOs that would solve the SPS issue being faced. The combination of these four elements defined a distinct capacity-building option. Respondents were free to define as many specific SPS capacity-building needs as they wished.

The CBOs generated from the above workshop was further reviewed by the country focal persons in consultation with their stakeholders back home. At this stage, certain capacity building options were excluded if they are not SPS issues related to trade, not mutually exclusive, part of an existing project,

are not real or clear requirement from the market, etc. The options that were included are listed and defined in Table 1.

**Table 1. Capacity-building options**

| Country | Capacity-Building Option |
|---|---|
| Tanzania | Hygiene and pesticide residue monitoring and controls in fish |
| | Hot water treatment for mango |
| | Pesticide residue monitoring and management in fresh beans |
| | Aflatoxin control and management in maize, groundnut and sorghum |
| | Hygiene controls and monitoring of heavy metals in vegetable oil |
| | Monitoring and management of fruit fly in fresh fruits |
| | Hygiene control for dry fish |
| | Monitoring and management of bacteria wilt in potatoes |
| | Mycotoxin and antibiotics monitoring in animal feeds |
| | Monitoring of cyanide in beverages |
| | Traceability system for maize seed |
| | Hygiene and pesticide residue monitoring and controls in honey |
| | Monitoring and management of fusarium wilt in banana |
| | Hygiene and cyanide monitoring and controls in cassava |
| | Residue monitoring and control of contaminants in spices |
| | Monitoring and control of antibiotics in eggs |
| | Disease monitoring and controls for hides and skins of cattle and sheep |
| Uganda | Hygiene and pesticide residue monitoring and controls in fish |
| | Aflatoxin control and management in maize |
| | Hygiene, pesticide residue, and aflatoxin monitoring and controls in milk |
| | Aflatoxin control and management in sorghum |
| | Aflatoxin control and management in groundnuts |
| | Aflatoxin control and management in soya beans |
| | Disease monitoring and controls in live cattle and beef |
| | Pesticide residue monitoring and management in fresh vegetables |
| | Training on biosecurity to reduce AI in day-old chicks |
| | Mycotoxin and antibiotics monitoring in animal feeds |
| | Monitoring and testing of heavy metals in cane sugar |
| | Hygiene and pesticide residue monitoring and controls in honey |
| | Disease monitoring and controls in chicken meat |
| | Residue monitoring and control of antibiotics use in eggs |
| Burundi | Hygiene and pesticide residue monitoring and controls in fish |
| | Monitoring and management of fruit fly in fresh fruits |
| | Disease and hygiene controls in hides and skins |
| | Monitoring of cyanide in beverages |
| | Monitoring and testing of heavy metals in tea |
| | Pesticide residue monitoring and controls in coffee |
| | Hygiene controls and monitoring of heavy metals in vegetable oil |

| | |
|---|---|
| Kenya | Harmonization of standards and documentation for AI in day-old chicks |
| | Hygiene, pesticide residue, and aflatoxin monitoring and controls in milk |
| | Mycotoxin and antibiotics monitoring in animal feeds |
| | Disease monitoring and controls in live cattle and beef |
| | Disease monitoring and controls in sheep meat |
| | Disease monitoring and controls in pigment |
| South Sudan | Disease and hygiene controls in hides and skins |
| | Monitoring and controls of contaminants in gum arabic |
| Rwanda | Disease and hygiene controls in hides and skins |

## Stage 3: Definition of decision criteria and weights

In the second stage of the stakeholder workshop, respondents were asked to define an appropriate set of criteria (i.e., the objectives) that will drive the priority-setting process and to assign weights to these. First, participants were presented with a series of potential decision criteria and asked which (if any) should be excluded and whether any potentially important criteria were missing. To define the decision weights, the workshop participants were each asked to assign 100 points amongst the ten decision criteria. The scores of participants were then collated, and an average weighting calculated. This average weighting was reported back to the workshop to identify any discrepancies. The final agreed weightings are reported in Table 2 below.

**Table 2. Decision criteria and weights**

| Objective | Decision Criteria | Average Weights |
|---|---|---|
| Cost | Up-front investment | 12.5 |
| | Ongoing cost | 7.8 |
| | Ease of implementation | 10.0 |
| Trade Impact | Change in absolute value of exports | 14.5 |
| | Impact on export diversification | 8.2 |
| Domestic Spillovers | Agricultural productivity | 8.7 |
| | Public health | 8.8 |
| | Environmental protection | 6.5 |
| | Impact on Poverty | 9.7 |
| | Gender Impacts | 6.2 |
| | Impact on Youth | 7.1 |
| **Total** | | **100.0** |

## Stage 4: Construction of Information Cards

Having identified the choice set of SPS capacity-building options and the decision criteria and weights to be applied in the priority-setting exercise, information was assembled into a series of information cards. The aim of these cards is not only to ensure consistency in the measurement of each decision criterion across the capacity-building options, but also to make the priority-setting exercise more transparent and open to scrutiny.

First, the specific nature of each of the SPS capacity-building options was described in some detail on the basis of existing documentation, consultation with stakeholders, etc. and are set out in Section 4. The metrics to be employed for each of the ten decision criteria were then defined, taking account of

currently available data and the range of plausible ways in which each of the criteria might be represented. Table 3 sets out the final metrics. Note that the choice of metrics involves a sometimes difficult compromise between the availability and quality of data, and the imperative to employ continuous quantitative measures. However, it is important to recognise that the aim of the framework is not to provide a final and definitive prioritisation of the capacity-building options. Rather, the priorities that are derived should be revisited on an on-going basis and revised as more and/or better data for the decision criteria become available.

Information cards for each of the SPS capacity-building options were then compiled. These are reported in Annex 1. Each card presents data for the eleven decision criteria, measured according to the scales outlined in Table 3. For each criterion, details are provided of how measures for each of the decision criteria were derived. There is also an indicator of the level of confidence in the measure reported. Where there is a lack of underlying data and/or these data are of dubious quality, a low or medium level of confidence is indicated. Conversely, where fairly rigorous and comprehensive prior research is available, a high level of confidence is reported. These confidence measures need to be considered in interpreting the results of the prioritisation exercise, and in considering how the analysis might be refined in the future.

**Table 3. Decision criteria measurement metrics**

| Decision Criterion | Details | Measurement |
|---|---|---|
| **Cost** | | |
| Up-front investment | Monetary costs of investments to upgrade SPS capacity | Absolute value ($) |
| On-going costs | Direct costs of maintaining and operating the upgraded SPS capacity | Absolute value ($) |
| Ease of Implementation | Expected complications in terms of need for multi-stakeholder involvement and collaboration | Yes (1) / No (-1) |
| **Trade Impact** | | |
| Change in absolute value of exports | Predicted enhancement of exports or avoided loss of exports five years from implementation of the intervention | Absolute value ($) |
| Export diversification | Would the implementation of the intervention allow for access to new/lost market or trade in a new product? | Yes (1) / No (-1) |
| **Domestic Spillovers** | | |
| Agricultural productivity | Changes in productivity of agricultural or fisheries production of commodities to export and/or domestic markets | Large negative (-2); Negative (-1); No change (0); Positive (+1); Large positive (+2) |
| Public health | Changes in domestic public health, through food safety, occupational exposure to hazards, etc. | |
| Environmental Protection | Changes in protection of natural environment | |
| Impact on Poverty | Change in the incidence of poverty | |
| Gender Impact | Impact on women or children | |
| Impact on Youth | Impact on youth | |

### Stage 5: Construction of spider diagrams

Through Stages 1 to 4, the inputs to the priority-setting process were collected and then assembled into the series of information cards. The aim of Stage 5 was to present the information in the information cards in a manner that permits easier comparison of the capacity-building options. Thus, spider diagrams were derived that plotted the SPS capacity-building options against the eleven decision criteria. Scrutiny of these diagrams (see Section 5) identified the decision criteria against which each of the capacity-building options performed relatively well/badly compared to the other capacity-building options in the choice set.

### Stage 6: Derivation of quantitative priorities

The formal priority-setting analysis involved the use of outranking through the D-Sight software package. The mechanics of the analysis are described in some detail in the user guide to the framework. The inputs to the model are the data assembled in the information cards. For most of the decision criteria preferences were modelled using a level function since these were measured using categorical scales. However, the up-front investment, on-going cost and absolute change in value of exports criteria were measured continuously and modelled using linear functions. Two models were estimated using D-sight:

- Baseline model using decision weights derived in Stage 3.
- Equal weights model in which all of the decision criteria are weighted equally.

The baseline model is considered to provide the most reliable set of priorities, in that it uses the full set of information derived through Stages 1 to 4. The two subsequent models were estimated in order to examine the extent to which the derived priorities are sensitive to changes in the decision criteria or weights; if the broad ranking of the SPS capacity-building options remains generally the same under the three scenarios presented by these models, we can be reasonably confident that the results of the framework are robust.

### Stage 7: Validation

The final stage of the priority-setting analysis is completed with this report on the results of the analysis. The aim of the validation process is to ensure that the results of the priority-setting framework were broadly in accordance with expectations, or that unexpected rankings can be explained through the pattern of data in the information cards. To facilitate this process, the draft report will be disseminated to stakeholders by email with a request for comments. Further, the preliminary results will be presented at a stakeholder workshop.

## 4.0 Results

### Regional ranking of all countries

Figure 2 below presents the main result of the prioritisation at regional level involving capacity building options of all the six East African Countries. The result shows that the capacity buildings Hot water treatment for Mango in Tanzania; Hygiene and pesticide residue monitoring and controls in honey in Tanzania; Monitoring and testing of heavy metals in cane sugar in Uganda; Hygiene control for dry fish in Tanzania; and Hygiene and pesticide residue monitoring and controls in fish in Tanzania ranked top five. This is followed by Hygiene, pesticide residue, and aflatoxin monitoring and controls in milk in Uganda; Monitoring and management of fruit fly in fresh fruits in Tanzania; Hygiene controls and monitoring of heavy metals in vegetable oil in Burundi; Residue monitoring and control of antibiotics use in eggs in Uganda; and Hygiene and Cyanide monitoring and controls in cassava in Tanzania, add up to make the top ten (Table 4).

**Table 4. Top ten capacity-building options for the East Africa region**

| Rank | Option | Country |
|---|---|---|
| 1 | Hot Water Treatment for Mango | Tanzania |
| 2 | Hygiene and Pesticide Residues in honey | Tanzania |
| 3 | Heavy Metals in Cane Sugar | Uganda |
| 4 | Hygiene Controls for Dry Fish | Tanzania |
| 5 | Hygiene and Pesticide Residues in Fish | Tanzania |
| 6 | Hygiene, Pesticide Residues and Aflatoxin in Milk | Uganda |
| 7 | Fruit Fly in Fresh Fruit | Tanzania |
| 8 | Heavy Metals in Vegetable Oil | Burundi |
| 9 | Antibiotics in Eggs | Uganda |
| 10 | Cyanide in Cassava | Tanzania |

Conversely, the capacity building options Aflatoxin control and management in soya beans in Uganda; Aflatoxin control and management in groundnuts in Uganda; Pesticide residue monitoring and management in fresh vegetables in Uganda; Disease monitoring and controls in pig meat in Kenya; and Mycotoxin and antibiotics monitoring in animal feeds in Uganda, makes up the bottom five.

Figure 3 reports the contribution of each decision criteria towards the overall performance of a capacity building option. The decision criteria having the greatest impact on the ranking, and especially the position of the top-ranked options are the impact on exports and poverty impacts.

To test the resilience of the result in the baseline model, we employ a sensitivity analysis by setting the weights on all decision criteria equal (Figure 4). The result shows that nine of the top ten capacity-building options are insensitive to changes in decision weights. Overall, the ranking of the 47 capacity-building options is insensitive to changes in the decision weights. Thus, we can say safely that the result in the baseline model is robust.

**Figure 2. Results of baseline model**

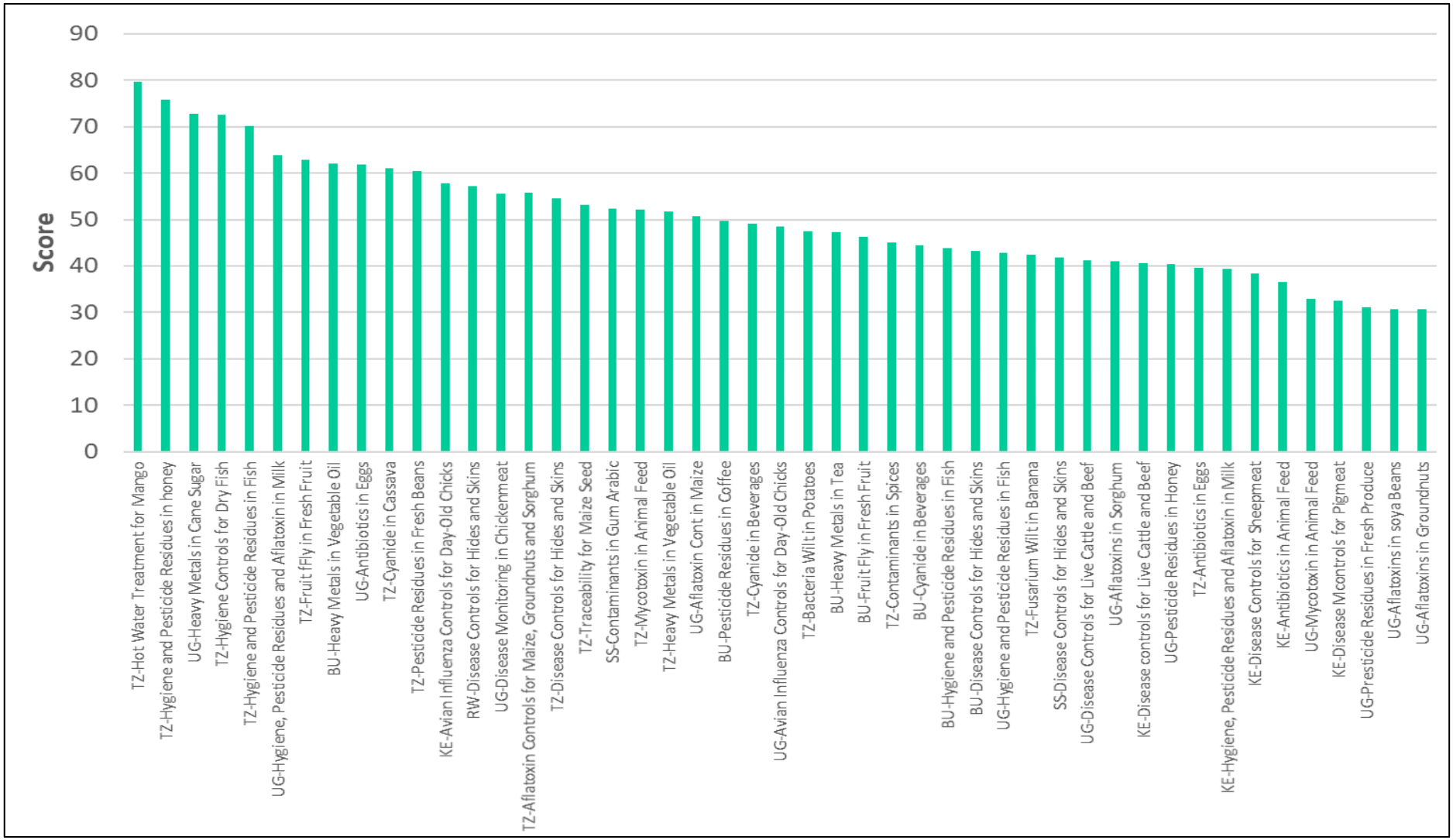


**Figure 3. Criteria contribution of baseline model**

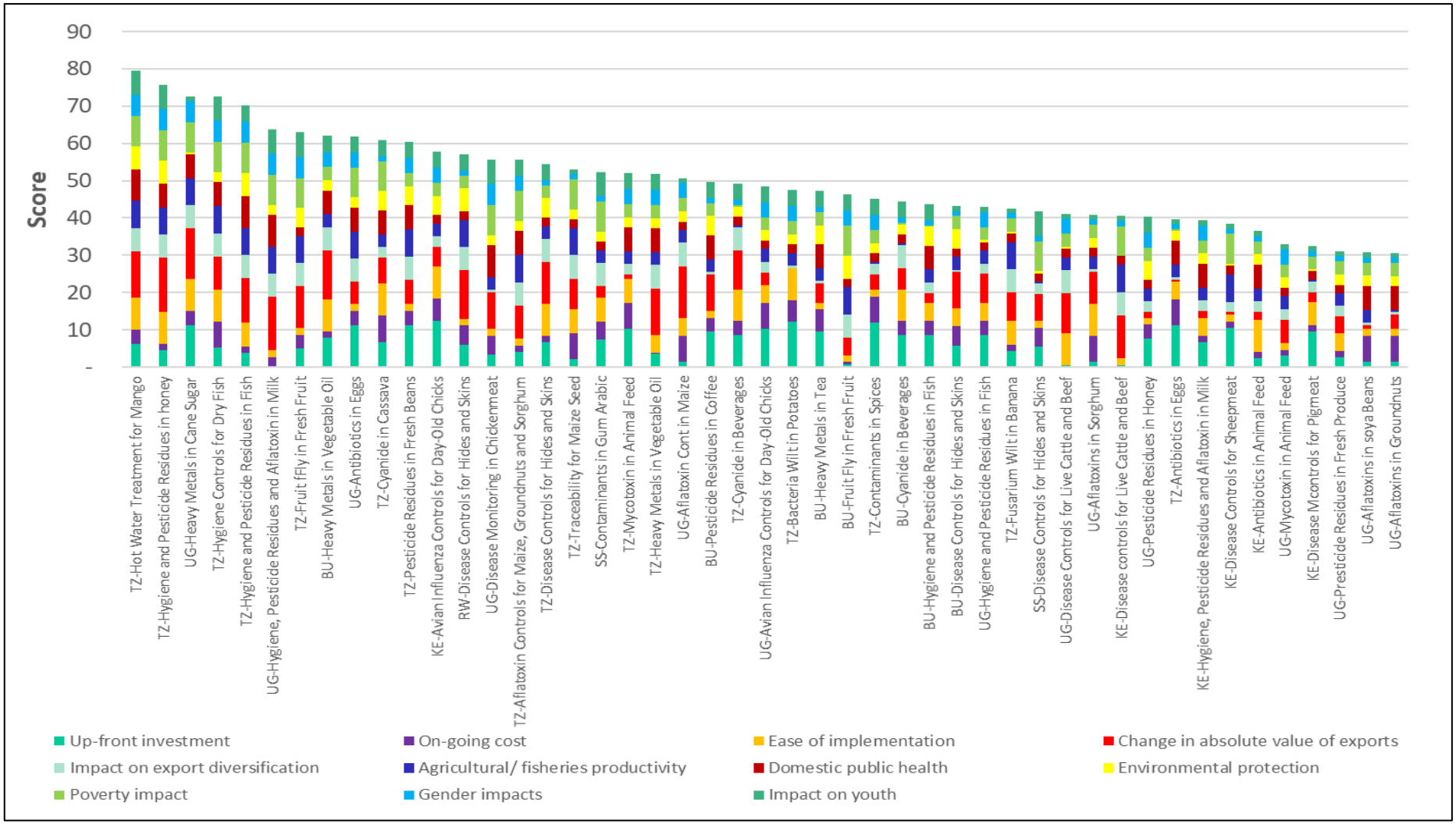
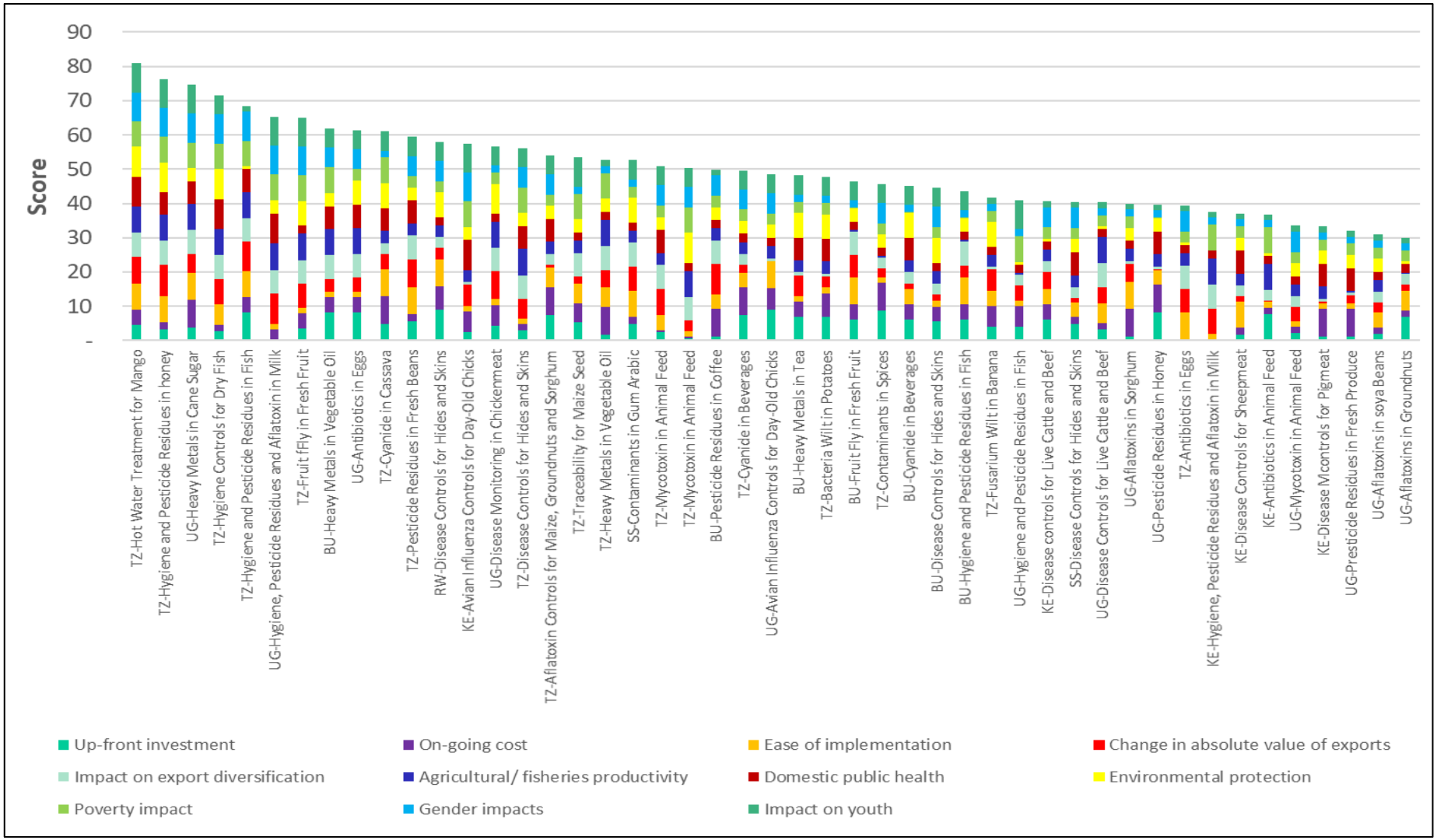


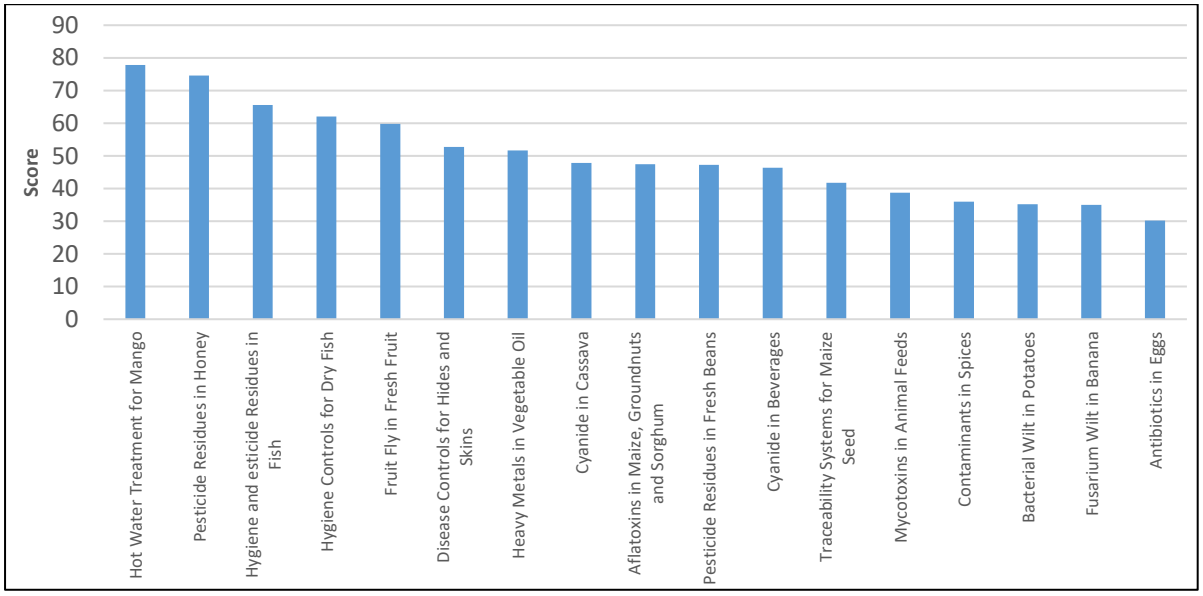
**Figure 4. Results of equal weights model**



## 5.2 Prioritisation results for Tanzania

The top five capacity building options for the Tanzanian prioritisation (Figure 5) include Hot water treatment for mango; Hygiene and pesticide residue monitoring and controls in honey; Hygiene and pesticide residue monitoring and controls in fish; Hygiene controls for dry fish; and Monitoring and management of fruit fly in fresh fruits. At the other end, Monitoring and control of antibiotics in eggs; Monitoring and management of fusarium wilt in banana; and Monitoring and management of bacteria wilts in Potatoes, ranked the lowest.

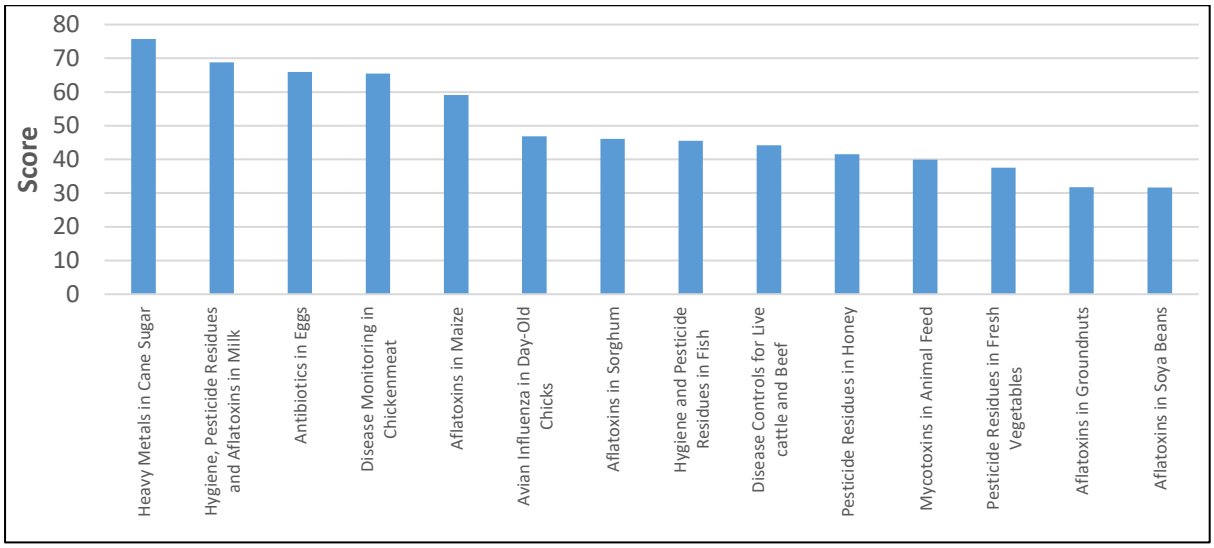
**Figure 5. Results of Tanzania baseline Model**




## 5.3 Prioritisation results for Uganda

From Figure 6, Monitoring and testing of heavy metals in cane sugar; Hygiene, pesticide residues and aflatoxins in milk; Residue monitoring and control of antibiotics use in eggs; Disease monitoring and controls in chicken meat; and Aflatoxin control and management in maize, are the top five capacity building options. From the bottom, the capacity building on Aflatoxin control and management in soya beans; Aflatoxin control and management in groundnuts; and Pesticide residue monitoring and management in fresh vegetables, ranked the lowest.

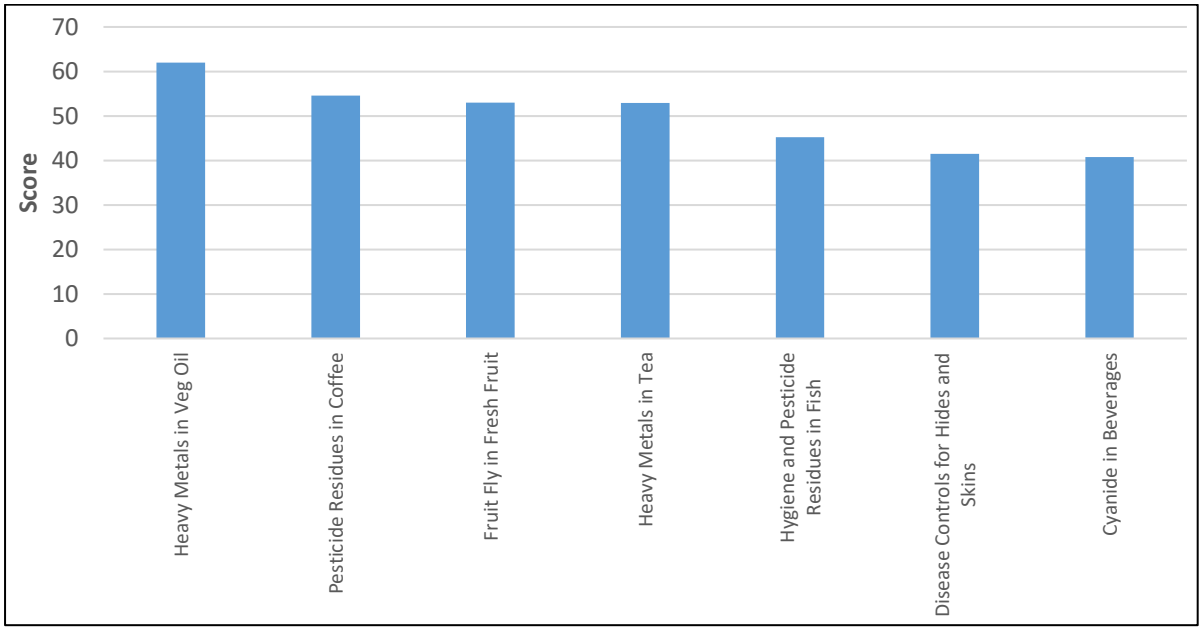
**Figure 6. Results of Uganda baseline model**




## 5.4 Prioritisation results for Burundi

The results shows that CBOs heavy metals in Hygiene controls and monitoring of heavy metals in vegetable oil; Pesticide residue monitoring and controls in coffee; and Monitoring and management of fruit fly in fresh fruits (mango, orange, malacouja, avocadoes, pineapple, and banana). On the other hand, monitoring of cyanide in beverages, and Monitoring of cyanide in beverages ranks lowest. The contribution analysis is reported in Figure 7. Again, the main criterion driving the prioritisation is the impact on exports.

**Figure 7. Results of Burundi baseline model**

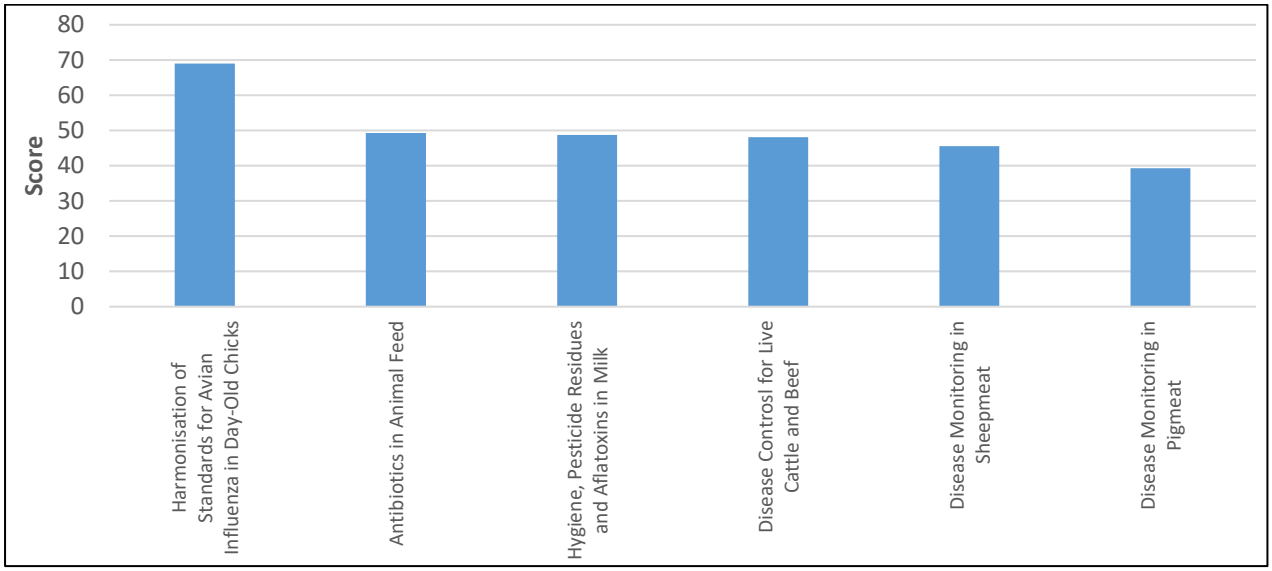



## 5.5 Prioritisation result for Kenya

The results in Figure 8 show that harmonization of standards for Avian Influenza in day-old chicks ranks the best, followed by Mycotoxin and antibiotics monitoring in animal feeds. In reverse, disease

monitoring and control in pig meat followed by disease monitoring and control in sheep meat ranks lowest.

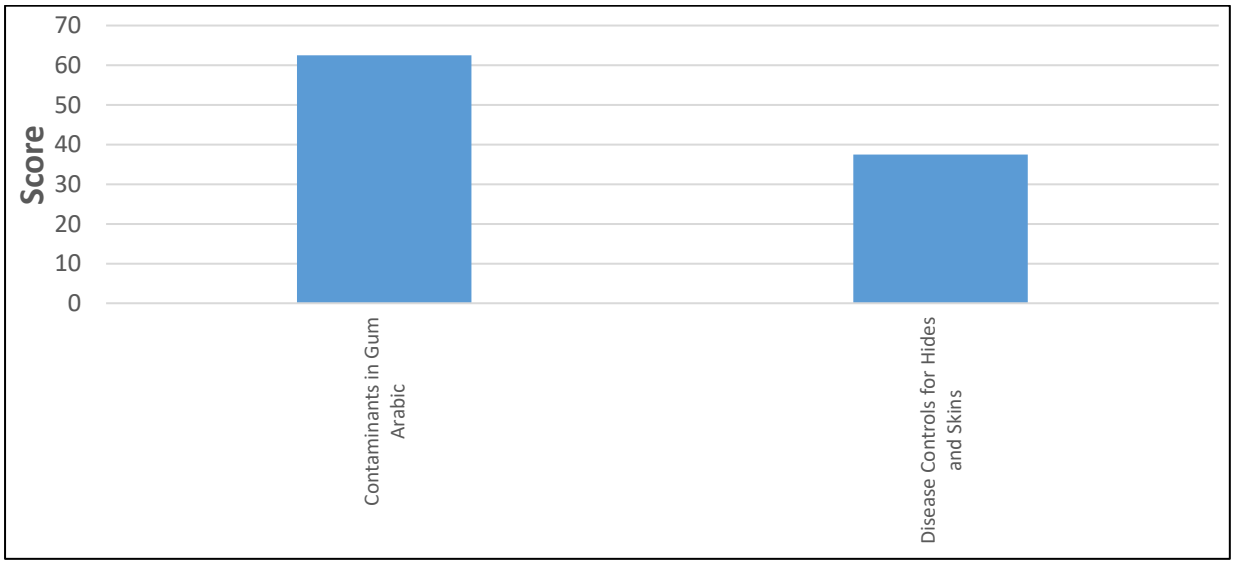
**Figure 8. Results of Kenya baseline model**




## 5.6 Prioritisation results for South Sudan

Figure 9 below presents the result for the two capacity building options for South Sudan. Monitoring and controls of contaminants in Gum Arabic ranked above disease and hygiene controls in hides and skins. This is because the later performed poorly on ease of implementation and environment protection.

**Figure 9. Results of South Sudan baseline model**




# 5.0 Conclusions

Overall, a significant number (47) of SPS capacity-building needs that impact regional trade were identified for the East Africa region. The countries with the largest number of identified capacity-building options are Tanzania (36%) and Uganda (30%). Similarly, these two countries represent the

clear top-five capacity-building options that dominate all others, Tanzania (4) and Uganda (1). At country-level prioritisations, the dominant capacity-building options for each of the six EAC countries are:

**Tanzania:**

- Hot water treatment for mango.
- Hygiene and pesticide residue monitoring and controls in honey.
- Hygiene and pesticide residue monitoring and controls in fish.
- Hygiene controls for dry fish.
- Monitoring and management of fruit fly in fresh fruits.

**Uganda:**

- Monitoring and testing of heavy metals in cane sugar.
- Hygiene, pesticide residues and aflatoxins in milk.
- Residue monitoring and control of antibiotics use in eggs.
- Disease monitoring and controls in chicken meat.
- Aflatoxin control and management in maize.

**Burundi:**

- Hygiene controls and monitoring of heavy metals in vegetable oil.
- Pesticide residue monitoring and controls in coffee.
- Monitoring and management of fruit fly in fresh fruits.

**Kenya:**

- Harmonization of standards for Avian Influenza in day-old chicks.
- Mycotoxin and antibiotics monitoring in animal feeds.
- Hygiene, pesticide residue, and aflatoxin monitoring and controls in milk.

**South Sudan:**

- Monitoring and controls of contaminants in Gum Arabic.
- Disease and hygiene controls in hides and skins.

**Rwanda:**

- Disease and hygiene controls in hides and skins.

The analysis had to contend with considerable difficulties obtaining data for the compilation of the information cards in all countries. Attention, therefore, needs to be given over time to improving the data in the information cards. The analysis is dependent on the decision criteria and weights; over time, it is important to reflect on if and how these might change.