



# **Using Multi Criteria Decision Analysis to Identify and Prioritise Key Sanitary and Phytosanitary Capacity Building Options and Needs for Armenia**

## **Executive Summary**

As part of efforts to establish more coherent and accountable decisions in the allocation of scarce resources towards competing Sanitary and Phytosanitary (SPS) capacity-building needs the use of multi-criteria decision analysis (MCDA) is advocated as a structured framework for making the costs and benefits of alternative capacity-building investments explicit and for identifying options that offer the greatest return.

Economic Research and Development Support Center, in the framework of the contract signed with the World Trade Organisation, implements a project “Applying the P-IMA framework in Armenia to promote export of agricultural products”. The purpose of the project is to apply the P-IMA<sup>1</sup> framework to enable concerned public and private sector stakeholders to prioritize SPS investments market access in export-oriented value chains.

The project was carried out by Economic Research and Development Support Center (ERDSC) in the period between September 2021 – June 2022. The following activities were performed in the framework of the project:

- Training to apply the P-IMA framework and D-Sight computer software in Armenia for state officials
- Compilation and analysis of SPS capacity assessments carried out in Armenia by international organisations (including identification of restrictions applied by import countries to Armenian agricultural products),
- Meetings and consultations with representatives of international organisations, trade representatives and ambassadors of partner countries,
- Organisation of stakeholder workshops to present the framework, identify possible SPS investment options in export-oriented value chains to be included in the analysis, discuss and identify decision criteria and weights to be used for the prioritization
- Meetings and consultations with state institutions on identified SPS investment options, decision criteria and weights as well as to compile the draft information sheets for the capacity building options included in the analysis
- Elaborate a draft report that prioritizes SPS investment options for export-oriented value chains in Armenia.

In order to identify the SPS capacity-building options to be considered in the priority-setting framework, two one-day on-line stakeholder workshops were held on 20 January and 11 February 2022. A total of 65 and 39 stakeholders attended the workshops, drawn from government, private sector and international organisations. Workshop participants were asked to participate a survey to identify the SPS capacity-building needs of Armenia:

- the product(s) affected;
- the specific SPS issue faced by exports of this product(s);
- the market(s) where these SPS needs were an issue
- the capacity-building option(s) that would solve the SPS issue being faced.

The combination of these four (4) elements defined a distinct capacity-building option. The views of all respondents were collected, analysed and then reported back to them during the second stakeholder workshop. The collection of items was then discussed within the working group in order to remove any ambiguities and to ensure that all SPS related issues are presented.

The eight (8) capacity-building options remaining after this process are outlined in Table below, which proceeded to the priority-setting stage of the analysis.

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<sup>1</sup> Prioritizing SPS Investments for Market Access

*Table 1. SPS capacity-building options*

Option		Brief Description
1	Animal health controls for meat product exports	Implementation of disease-free areas and related controls to meet safety status adopted by the OIE for a number of infectious diseases and to be able to export meat products to Russia and other countries.
2	Pesticide residue controls for dried fruit and herb exports	Implementation of good agricultural practice in fruit and herb production and related controls to meet requirements for pesticide residues in the EU.
3	Hygiene and residue controls for fish exports	Upgrading of hygiene controls in fish processing and related controls to meet requirements in the EU.
4	Pesticide and antibiotic residue controls for honey exports	Implementation of production controls and upgrading of testing capacity to meet EU requirements for honey.
5	HACCP and LACF requirements for canned food exports	Upgrading of processing and hygiene controls to meet US requirements for HACCP and low-acid canned foods.
6	Animal health controls for live animal exports	Implementation of disease-free areas and related controls to meet safety status adopted by the OIE for a number of infectious diseases and to be able to export meat products to Iran and other countries.
7	Hygiene controls for processed egg exports	Upgrading of hygiene controls in egg processing to meet EU requirements.
8	Controls on phthalates for wine product exports	Controls on phthalates in wine production to meet requirements in China.

These eight (8) capacity-building options are prioritised on the basis of a series of twelve (12) decision criteria to which weights are applied. To define the decision weights, the working group members were each asked to assign 100 points amongst the 12 decision criteria. The scores of participants were then collated and an average weighting calculated. This average weighting was reported back to the members of the working group to identify any discrepancies. The final agreed weightings are reported in Table below.

*Table 2. Decision criteria and weights for setting priorities of SPS capacity-building options*

No.	Decision Criterion	Weight
1	Up-Front Investments	10
2	On-Going Costs	11
3	Difficulty of Implementation	7
4	Sustainability of Capacity	9
5	Growth or Avoided Loss of Agri-Food Exports	9
6	Degree to which Agri-Food Exports Diversified	8
7	Impact on Public Health in Armenia	9
8	Impact on Environmental Protection in Armenia	6

No.	Decision Criterion	Weight
9	Impact on Level of Poverty in Armenia	9
10	Impact on International Reputation of Armenian Agri-Food Products	9
11	Impact on agricultural SME development	7
12	Impact on stakeholder collaboration	6
<b>Total</b>		<b>100%</b>

The metrics to be employed for each of the 12 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.

*Table 3. Decision criteria measurement*

Decision Criterion	Measurement
<b>Cost and Challenges of implementation</b>	
Up-Front Investments	Monetary cost (local currency)
On-Going Costs	Annual monetary cost (local currency)
Difficulty of Implementation	Seven-point scale: 'Very difficult' (7) to 'Very easy' (1)
Sustainability of Capacity	Seven-point scale: 'Very sustainable' (7) to 'Very unsustainable' (1)
<b>Trade impacts</b>	
Growth or Avoided Loss of Agri-Food Exports	10-point scale: 'Little or no increase' (1) to 'Very significant' (10)
Degree to which Agri-Food Exports Diversified	Significant increase (+2) Increase (+1) No change (0)
Impact on International Reputation of Armenian Agri-Food Products	Seven-point scale: 'Very significant' (7) to 'Very insignificant' (1)
<b>Domestic agri-food impacts</b>	
Impact on Public Health in Armenia	Seven-point scale: 'Very positive' (+3) to 'Very negative' (-3)
Impact on Environmental Protection in Armenia	Seven-point scale: 'Very positive' (+3) to 'Very negative' (-3)
<b>Social impacts</b>	
Impact on Level of Poverty in Armenia	Seven-point scale: 'Very positive' (+3) to 'Very negative' (-3)
Impact on agricultural SME development	Seven-point scale: 'Very significant' (7) to 'Very insignificant' (1)
Impact on stakeholder collaboration	Seven-point scale: 'Very significant' (7) to 'Very insignificant' (1)

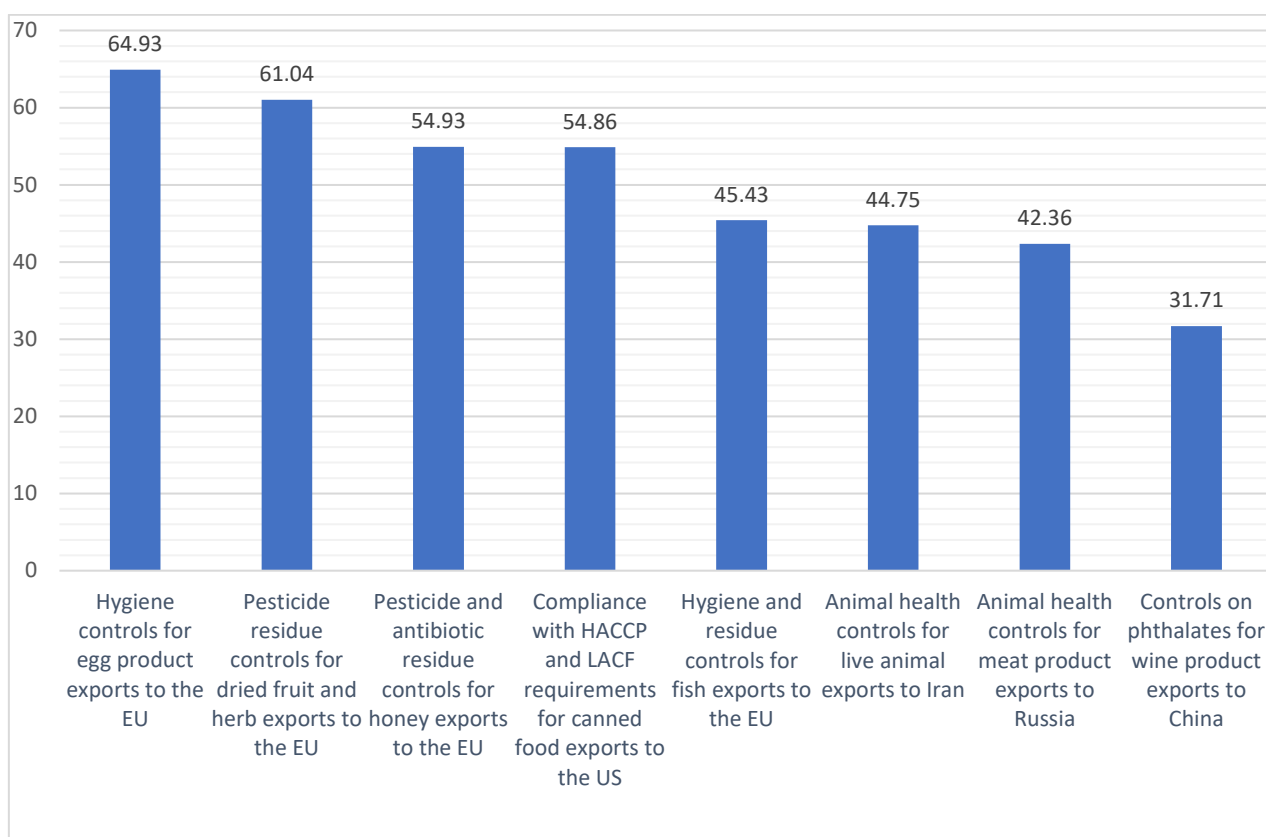
Information cards for each of the eight (8) SPS capacity-building options were then compiled. Each card presents data for the twelve (12) decision criteria, measured according to the scales outlined in Table 3.

The formal priority-setting analysis involved the use of outranking through the D-Sight software package. Three (3) models were estimated using D-sight:

- Baseline model using decision weights.
- Equal weights model in which all of the decision criteria are weighted equally.
- Costs and trade impact model in which only the cost and trade impact decision criteria are included in the analysis with the respective weights from the baseline model applied.

Figure 1 reports the net flows for the eight (8) SPS capacity-building options for the baseline model; that is the prioritisation derived using the decision weights defined in the stakeholder workshops. The options are ordered according to decreasing score, and so declining priority. The option judged to be top priority on the basis of the 12 decision criteria is “Hygiene control for egg product exports”. Other high-ranked options are “Pesticide residue controls for dried fruit and herb exports” and “Pesticide and antibiotic residue controls for honey exports to the EU”. The option ranked bottom, and with a net flow significantly below all other options is “Controls on phthalates for wine product exports”.

Figure 1. Net flows for baseline model, %



The prioritisation of the eight (8) SPS capacity-building options reflects a trade-off or compromise between all twelve (12) decision criteria. It is worth to mention that none of the options dominates all others with respect to every one of the 12 decision criteria. Thus, in choosing an option that is given a high priority, meaning it generally performs well with respect to the chosen decision criteria, there is still a degree of compromise in terms of under-performance with respect to certain of these criteria, relative to the other capacity-building options being considered.

This analysis has presented the initial results of a priority-setting exercise for SPS capacity-building in Armenia. The priorities were defined using a prioritisation framework based on MCDA, which

provides a structured and transparent approach to ranking capacity-building options on the basis of predefined and agreed decision criteria.

The result of the application of the MCDA framework is a clear ranking of the eight (8) capacity-building options that are identified, which is apparently robust to changes in the decision criteria that are applied and to the weights attached to these criteria.

Given the robustness of the results, the ranking provided by the MCDA framework provides a coherent basis on which to define a national action plan for SPS capacity-building in Armenia, and to support efforts to secure the necessary resources, both nationally and internationally. However, importantly, the results presented above should be only the starting point in the use of MCDA to prioritise SPS capacity-building options in the country. Thus, these results should be revisited and revised on an on-going basis in the light of improvements in the availability and/or quality of data, changes in policy priorities that imply shifts in the decision weights and/or the introduction of new decision criteria. If new capacity-building needs arise, these need to be added to the analysis. Conversely, as investments are made in the options included above, these need to be excluded and the priorities re-estimated.

Following this trial application, we would love to see Armenia employing the MCDA framework on a routine basis for the planning of SPS capacity-building. Towards this end, there is a need to put in place systems for the effective capture of the data needed to populate and update the information sheets, and to enable these data to be validated. These will require that fruitful linkages are established with private sector and other stakeholders, and across those involved in various SPS and trade functions within the government.