Using Multi Criteria Decision Analysis to Identify and Prioritize Key SPS Capacity Building Options and Needs for Malawi

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Structure

• Background
• Aims & nature of framework
• Practical process
• Results
• Conclusion
Background

- Many countries face challenges complying with SPS measures in international trade
- SPS capacity-building needs are often substantial
- Challenges establishing priorities in face of resource constraints
- Process of priority-setting often lacks coherence and transparency
- Efforts to develop more rigorous framework for setting priorities
Aims of framework

• Provide structured approach to establishing priorities between alternative SPS capacity-building options
• Enhance transparency of SPS capacity-building decisions
• Facilitate inputs to priority-setting from diverse stakeholders
  • Greater resource efficiency
  • Demand-driven capacity-building
  • Enhanced trade and social outcomes and impacts
## Priority-setting framework

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Weights</th>
<th>Option 1</th>
<th>Option 2</th>
<th>Option 3</th>
<th>Option 4</th>
<th>Option 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cost</strong></td>
<td>20%</td>
<td>$3 million</td>
<td>$500,000</td>
<td>$2 million</td>
<td>$250,000</td>
<td>$3 million</td>
</tr>
<tr>
<td><strong>Growth in Exports</strong></td>
<td>30%</td>
<td>30%</td>
<td>20%</td>
<td>50%</td>
<td>10%</td>
<td>15%</td>
</tr>
<tr>
<td><strong>Small farmers</strong></td>
<td>30%</td>
<td>No</td>
<td>Yes</td>
<td>No</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td><strong>Poverty impacts</strong></td>
<td>20%</td>
<td>Minor</td>
<td>Major</td>
<td>Moderate</td>
<td>Minor</td>
<td>Major</td>
</tr>
<tr>
<td><strong>Ranking</strong></td>
<td></td>
<td>5</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>4</td>
</tr>
</tbody>
</table>
Practical Process - Stages in prioritisation process

1. Compilation of Information Dossier
2. Definition of Choice Set
3. Definition of Decision Criteria/Weights
4. Compilation of Information Cards
5. Construction of Spider Diagrams
6. Derivation of Quantitative priorities
7. Validation
8. Sifting of Options
Malawi Stakeholder Workshop

• Workshop held 8th February 2012
• 37 participants:
  – Public sector (17)
  – Private sector (9)
  – Donors (6)
  – Research (5)
• Identified 31 capacity-building options
Nature of capacity-building option

Product(s) → SPS Issue → Export Market(s) → Capacity-Building Option
Identified capacity-building options

1. Post-harvest treatment for mangoes
2. Aflatoxin controls for groundnuts
3. Aflatoxin controls for maize
4. Mycotoxin testing capacity
5. Compliance with SPS requirements for honey exports
6. Pesticide controls for tobacco
7. Pesticide controls for pulses
8. Pesticide controls for maize
9. Pesticide controls for tea
Identified capacity-building options

10. Pesticide residue testing capacity
11. Animal health controls for (live ornamental) fish exports
12. Compliance with hygiene requirements for milk and dairy product exports
13. Virus indexing capacity for planting materials
14. Compliance with SPS requirements for chilli sauce exports
15. Seed inspection and certification capacity
16. Animal health controls for day old chick exports
Excluded capacity-building options

1. Controls for Larger Grain Borer in maize
2. Plant pest controls for cut flowers
3. Controls for weevils in pulses
4. Animal disease controls for hides and skins
5. Controls for pests and diseases in citrus fruit
6. Genetically-modified organism (GMO) testing for maize
7. Plant pest controls for tobacco
8. Starch testing for roots and tubers
Excluded capacity-building options

9. Coffee packaging
10. Nutrient content testing for fortified maize meal
11. Plant health controls for timber packaging
12. HACCP requirements for rice exports
13. Food safety controls for processed mango
14. Capacity for HACCP certification in a variety of sectors
15. SPS controls for cotton
## Decision criteria and weights - defined at stakeholder workshop

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Weight</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cost and difficulty of implementation</strong></td>
<td></td>
</tr>
<tr>
<td>Up-front investment</td>
<td>11%</td>
</tr>
<tr>
<td>On-going costs</td>
<td>9%</td>
</tr>
<tr>
<td>Difficulty of implementation</td>
<td>8%</td>
</tr>
<tr>
<td><strong>Trade impact</strong></td>
<td></td>
</tr>
<tr>
<td>Change in value of exports</td>
<td>20%</td>
</tr>
<tr>
<td>Trade diversification</td>
<td>11%</td>
</tr>
<tr>
<td><strong>Domestic agri-food impacts</strong></td>
<td></td>
</tr>
<tr>
<td>Agricultural/fisheries productivity</td>
<td>12%</td>
</tr>
<tr>
<td>Domestic public health</td>
<td>8%</td>
</tr>
<tr>
<td>Environmental protection</td>
<td>7%</td>
</tr>
<tr>
<td><strong>Social impacts</strong></td>
<td></td>
</tr>
<tr>
<td>Poverty impacts</td>
<td>9%</td>
</tr>
<tr>
<td>Impact on vulnerable groups</td>
<td>6%</td>
</tr>
</tbody>
</table>
# Measurement of decision criteria

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cost</strong></td>
<td></td>
</tr>
<tr>
<td>Up-front investment</td>
<td>Absolute value ($)</td>
</tr>
<tr>
<td>On-going costs</td>
<td>% value of exports</td>
</tr>
<tr>
<td>Difficulty of implementation</td>
<td>‘Very easy’ (1) to ‘Very difficult’ (5)</td>
</tr>
<tr>
<td><strong>Trade impact</strong></td>
<td></td>
</tr>
<tr>
<td>Absolute change in value of exports</td>
<td>Absolute value (2017)</td>
</tr>
<tr>
<td>Trade diversification</td>
<td>‘Large negative’ (-2) to ‘Large positive’ (+2)</td>
</tr>
<tr>
<td><strong>Domestic agri-food impacts</strong></td>
<td></td>
</tr>
<tr>
<td>Agricultural/fisheries productivity</td>
<td>‘Large negative’ (-2) to ‘Large positive’ (+2)</td>
</tr>
<tr>
<td>Domestic public health</td>
<td></td>
</tr>
<tr>
<td>Environmental protection</td>
<td></td>
</tr>
<tr>
<td><strong>Social impacts</strong></td>
<td></td>
</tr>
<tr>
<td>Poverty impacts</td>
<td>‘Large negative’ (-2) to ‘Large positive’ (+2)</td>
</tr>
<tr>
<td>Impact on vulnerable groups:</td>
<td></td>
</tr>
<tr>
<td>Decision Criterion</td>
<td>Value</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>----------------</td>
</tr>
<tr>
<td><strong>Cost</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Up-front investment</strong></td>
<td>US$180,000</td>
</tr>
<tr>
<td><strong>On-going cost</strong></td>
<td>0%</td>
</tr>
<tr>
<td><strong>Ease of implementation</strong></td>
<td>5</td>
</tr>
<tr>
<td><strong>Trade impacts</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Change in absolute value of exports</strong></td>
<td>US$1.0 million</td>
</tr>
<tr>
<td><strong>Trade diversification</strong></td>
<td>+1</td>
</tr>
<tr>
<td><strong>Domestic agri-food impacts</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Agricultural/fisheries productivity</strong></td>
<td>+1</td>
</tr>
<tr>
<td><strong>Domestic public health</strong></td>
<td>0</td>
</tr>
<tr>
<td><strong>Environmental protection</strong></td>
<td>0</td>
</tr>
<tr>
<td><strong>Social impacts</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Poverty impact</strong></td>
<td>+1</td>
</tr>
<tr>
<td><strong>Up-front investment</strong></td>
<td>0</td>
</tr>
</tbody>
</table>
Results - Decision criteria measures scores for selected criteria

[Diagram showing radar chart with various criteria including:
- Pesticide controls for tea
- Compliance with SPS requirements for chilli sauce exports
- Virus indexing capacity for planting material
- Aflatoxin controls for groundnuts
- Compliance with SPS requirements for honey exports
- Seed inspection and certification capacity
- Pesticide controls for pulses
- Pesticide controls for tobacco
- Compliance with hygiene requirements for milk exports
- Hot water treatment for mangoes
- Animal health controls for fish exports
- Aflatoxin controls for maize
- Mycotoxin testing capacity
- Animal health controls for day old chick exports]

Legend:
- Red line: Trade diversification impact
- Blue line: Poverty impact
Prioritisation – Equal weights model

- Pesticide controls for tea
- Compliance with SPS requirements for chilli sauce exports
- Virus indexing capacity for planting material
- Aflatoxin controls for groundnuts
- Compliance with SPS requirements for honey exports
- Seed inspection and certification capacity
- Pesticide controls for pulses
- Pesticide controls for tobacco
- Compliance with hygiene requirements for milk exports
- Hot water treatment for mangoes
- Animal health controls for fish
- Mycotoxin testing capacity
- Pesticide controls for maize
- Aflatoxin controls for maize
- Animal health controls for day old chick exports
- Pesticide residue testing capacity

(Chart showing prioritization of various agricultural factors with Equal weights model)
Prioritisation – Cost/difficulty of implementation and trade only model
Prioritisation – Adjusting aggregate trade impact of aflatoxin controls for maize

[Bar chart showing the impact of different factors on trade]
Prioritisation – Adjusting aggregate trade impact of hygiene requirements for milk exports
Validation Workshop

• Held on 28th June 2012
• 24 participants
• Endorsed the results with some minor factual corrections
  – Which led to a sensitivity analysis for Compliance with hygiene requirements for milk and dairy products exports
  – This option came 5th position – instead of its original 8th position in baseline model
Conclusions

• Framework provides objective and transparent approach to deriving priorities for SPS capacity-building
• Results relatively robust
• Framework designed to support capacity-building decisions:
  – Definition of prioritised action plan
  – Compilation of case for national budgetary allocations
  – Compilation of cases/proposals for donor support
• Designed to be used on an on-going basis....
• ....thus are at the start rather than the finish!
Summary of prioritisation

High priority

• Pesticide controls for tea
• Compliance with SPS requirements for chilli sauce exports
• Virus indexing capacity for planting material
• Aflatoxin controls for groundnuts

Low priority

• Pesticide residue testing capacity
• Pesticide controls for maize
• Animal health controls for day old chicks
Thank you for your attention